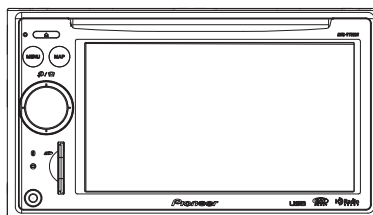


# Service Manual



AVIC-F700BT/XS/UC

ORDER NO.  
**CRT4157**

FLASH MEMORY MULTIMEDIA AV NAVIGATION RECEIVER

# AVIC-F700BT /XS/UC

# AVIC-F7010BT /XS/UC

NAVIGATION AV SYSTEM

# AVIC-F700BT /XS/EW5

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3195	CRT3815	S10.5COMP2	CD Mech. Module : Circuit Descriptions, Mech. Descriptions, Disassembly



For details, refer to "Important Check Points for Good Servicing".

# SAFETY INFORMATION

## **CAUTION**

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

## **WARNING**

This product contains certain electrical parts contain chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm.  
Health & Safety Code Section 25249.6 - Proposition 65

This product contains mercury. Disposal of this material may be regulated due to environmental considerations. For disposal or recycling information, please contact your local authorities or the Electronics Industries Alliance: [www.eiae.org](http://www.eiae.org).

The backlighting lamp of LCD in this equipment contains mercury. Disposal of this material may be regulated due to environmental considerations according to Local, State or Federal Laws. For disposal or recycling information, please contact your local authorities or the Electronics Industries Alliance: [www.eiae.org](http://www.eiae.org)

Where in a manufacturer's service documentation, for example in circuit diagrams or lists of components, a symbol is used to indicate that a specific component shall be replaced only by the component specified in that documentation for safety reasons, the following symbol shall be used:



### ● Safety Precautions for those who Service this Unit.

When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.

#### Caution:

1. During repair or tests, minimum distance of 13 cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

#### **CAUTION:**

**USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.**

**WARNING!**

The AEL (accessible emission level) of the laser power output is less than CLASS 1 but the laser component is capable of emitting radiation exceeding the limit for CLASS 1.

A specially instructed person should do servicing operation of the apparatus.

**Laser diode characteristics**

Wave length : 785 nm to 814 nm

Maximum output : 1 190 W(Emitting period : unlimited)

**Additional Laser Caution**

Transistors Q101 in PCB drive the laser diodes.

When Q101 is shorted between their terminals, the laser diodes will radiate beam.

If the top cover is removed with no disc loaded while such short-circuit is continued, the naked eyes may be exposed to the laser beam.

## [Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol. Please be sure to confirm and follow these procedures.

### 1. Product safety



Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

- ① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

- ② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

- ③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris. Soldering should be finished with the proper quantity. (Refer to the example)

- ④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

- ⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

- ⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs. In addition, be sure that there are no pinched wires, etc.

- ⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

- ⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages. If you find a damaged power cord, please exchange it with a suitable one.

- ⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

- ⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries. Please pay attention to your surroundings and repair safely.

### 2. Adjustments



To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification. Adjustments should be performed in accordance with the procedures/instructions described in this manual.

### 3. Lubricants, Glues, and Replacement parts



Use grease and adhesives that are equal to the specified substance. Make sure the proper amount is applied.

### 4. Cleaning



For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

### 5. Shipping mode and Shipping screws



To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.



# CONTENTS

SAFETY INFORMATION .....	2
1. SERVICE PRECAUTIONS.....	6
1.1 SERVICE PRECAUTIONS.....	6
1.2 NOTES ON SOLDERING.....	7
2. SPECIFICATIONS.....	8
2.1 SPECIFICATIONS .....	8
2.2 DISC/CONTENT FORMAT .....	11
2.3 PANEL FACILITIES .....	12
2.4 CONNECTION DIAGRAM.....	15
3. BASIC ITEMS FOR SERVICE .....	17
3.1 CHECK POINTS AFTER SERVICING .....	17
3.2 PCB LOCATIONS.....	18
3.3 JIGS LIST .....	19
3.4 CLEANING .....	20
4. BLOCK DIAGRAM .....	22
4.1 OVERALL CONNECTION DIAGRAM .....	22
4.2 BLOCK DIAGRAM.....	24
4.3 POWER SUPPLY SYSTEM FIGURE.....	32
5. DIAGNOSIS .....	36
5.1 OPERATIONAL FLOWCHART .....	36
5.2 ERROR CODE LIST.....	38
5.3 CONNECTOR FUNCTION DESCRIPTION .....	39
5.4 TROUBLESHOOTING.....	40
6. SERVICE MODE.....	44
6.1 TEST MODE.....	44
6.2 CD TEST MODE.....	56
6.3 uBOOT MENU.....	59
6.4 USING THE TEST DISC .....	60
7. DISASSEMBLY .....	66
8. EACH SETTING AND ADJUSTMENT .....	75
8.1 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT .....	75
8.2 AV UNIT ADJUSTMENT.....	77
8.3 FLICKER ADJUSTMENT .....	79
9. EXPLODED VIEWS AND PARTS LIST .....	80
9.1 PACKING.....	80
9.2 EXTERIOR(1) .....	84
9.3 EXTERIOR(2) .....	86
9.4 EXTERIOR(3) .....	88
9.5 CD MECHANISM MODULE .....	90
10. SCHEMATIC DIAGRAM.....	92
10.1 AV UNIT(PS/IF SECTION)(GUIDE PAGE) .....	92
10.2 AV UNIT(A/V SECTION)(GUIDE PAGE) .....	98
10.3 AV UNIT(TUNER SECTION) .....	104
10.4 AV UNIT(SYSTEM uCOM SECTION)(GUIDE PAGE).....	106
10.5 AV UNIT(RGB LED DRIVER SECTION) .....	112
10.6 AV UNIT(IF SECTION)(GUIDE PAGE).....	114
10.7 KEYBOARD UNIT .....	120
10.8 CD MECHANISM MODULE(GUIDE PAGE).....	122
10.9 WAVEFORMS.....	128
11. PCB CONNECTION DIAGRAM .....	130
11.1 AV UNIT .....	130
11.2 KEYBOARD UNIT.....	134
11.3 CD CORE UNIT(S10.5COMP2) .....	136
12. ELECTRICAL PARTS LIST .....	138

# 1. SERVICE PRECAUTIONS

## 1.1 SERVICE PRECAUTIONS



1. You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.
2. Be careful in handling ICs. Some ICs such as MOS type are so fragile that they can be damaged by electrostatic induction.
3. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY".
4. After replacing the pickup unit, be sure to check the grating.

### EJECT LOCK MODE for CD mechanism

In order to change the EJECT LOCK/UNLOCK status of the mechanism, please perform following procedure.

< Procedure >

Top Menu -> AV Source -> Source OFF



Short push area "A" -> Short push area "B" -> Long push area "C" on above screen.  
(In order to change the status, follow the same operation.)

The current status can be confirmed by "OFF" character color.



Eject Lock: OFF



Eject Lock: ON



SD Logo is a trademark.



SDHC Logo is a trademark.



The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Pioneer Corporation is under license. Other trademarks and trade names are those of their respective owners.

## 1.2 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.  
Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.
- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 °C.  
Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 °C in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:

- Parts numbers of lead-free solder:  
GYP1006 1.0 in dia.  
GYP1007 0.6 in dia.  
GYP1008 0.3 in dia.

## 2. SPECIFICATIONS

### 2.1 SPECIFICATIONS

#### ● AVIC-F700BT/XS/UC, AVIC-F7010BT/XS/UC

##### General

Rated power source .....	14.4 V DC (allowable voltage range: 10.8 V to 15.1 V DC)
Grounding system .....	Negative type
Max. current consumption .....	10.0 A
Backup current .....	6.5 mA or less
Dimensions (W × H × D):	
Chassis .....	178 mm × 100 mm × 157 mm (7 in. × 3-7/8 in. × 6-1/2 in.)
Nose .....	170 mm × 96 mm × 8 mm (6-3/4 in. × 3-7/8 in. × 3/8 in.)
Weight .....	2.1 kg (4.7 lbs)
NAND flash memory .....	2 GB

##### Navigation

GPS Receiver:	
System .....	L1, C/Acode GPS SPS (Standard Positioning Service)
Reception system .....	30-channel multi-channel reception system
Reception frequency ....	1 575.42 MHz
Sensitivity .....	-140 dBm (typ)
Position update frequency .....	Approx. once per second
GPS antenna:	
Antenna .....	Micro strip flat antenna/ right-handed helical polarisation
Antenna cable .....	5.0 m (16 ft. 5 in.)
Dimensions (W × H × D) .....	33 mm × 15 mm × 36 mm (1-1/4 in. × 1/2 in. × 1-3/8 in.)
Weight .....	96 g (0.23 lbs)

##### Display

Screen size/aspect ratio .....	5.8 inch wide/16:9 (effective display area: 128 × 72 mm)
Pixels .....	384 000 (800 × 480)
Display method .....	TFT Active matrix driving
Color system .....	NTSC/PAL compatible
Durable temperature range:	
Power on .....	+14 °F to +140 °F

Power off ..... -4 °F to +176 °F

##### Audio

Maximum power output .....	50 W × 4 50 W × 2 ch/4Ω + 70 W × 1 ch/2Ω (for subwoofer)
Continuous power output ...	22 W × 4 (50 Hz to 15 kHz, 5%THD, 4Ω LOAD, Both Channels Driven)
Load impedance .....	4Ω (4Ω to 8Ω [2Ω for 1 ch] allowable)
Preout output level (max).....	2.2 V
Preout max output level/output impedance .....	4.0 V/100 kohm
Preout impedance.....	1 kohm
Equalizer (3-Band Parametric Equalizer):	
Low	
Frequency .....	40/80/100/160 Hz
Q Factor .....	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain .....	±12 dB
Mid	
Frequency .....	200 Hz/500 Hz/1 kHz/2 kHz
Q Factor .....	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain .....	±12 dB
High	
Frequency .....	3.15/8/10/12.5 kHz
Q Factor .....	0.35/0.59/0.95/1.15 (+6 dB when boosted)
Gain .....	±12 dB
Loudness contour:	
Low .....	+3.5 dB (100 Hz), +3 dB (10 kHz)
Mid .....	+10 dB (100 Hz), +6.5 dB (10 kHz)
High .....	+11 dB (100 Hz), +11 dB (10 kHz) (volume: -30 dB)
HPF:	
Frequency .....	50/63/80/100/125 Hz
Slope .....	-12 dB/oct
Subwoofer:	
Frequency .....	50/63/80/100/125 Hz
Slope .....	-18 dB/oct
Gain .....	-24/+6 dB
Phase .....	Normal/Reverse

Bass boost:  
Gain ..... 0 dB to +12 dB

### CD drive

System ..... CD, MP3, WMA, AAC system  
Usable discs ..... CD, MP3, WMA, AAC  
Signal-to-noise ratio ..... 94 dB (1 kHz) (IHF-A network)  
MP3 decoding format ..... MPEG-1 & 2 Audio Layer 3  
WMA decoding format ..... Ver.7,7.1,8,9,10 (2 ch audio) (Windows Media Player)  
AAC decoding format ..... MPEG-4 AAC (iTunes encoded only)  
WAVE SIGNAL FORMAT ..... Linear-PCM, MS ADPCM (Non Compressed)

### USB

USB standard spec. .... USB 2.0 High Speed  
Max current supply ..... 500 mA  
Max capacity memory ..... 2 GB

File system ..... FAT16, FAT32  
USB class ..... Mass storage class  
Decoding format ..... MP3/WMA/AAC/WAVE/MPEG4

### SD

Compatible physical format ..... Version 2.00  
Max capacity memory ..... 8 GB  
File system ..... FAT16, FAT32  
Decoding format ..... MP3/WMA/AAC/WAVE/MPEG4

### Bluetooth

Version ..... Bluetooth 1.2 certified  
Output power ..... +4 dBm Max.  
(Power class 2)

### FM tuner

Frequency range ..... 87.9 MHz to 107.9 MHz  
Usable sensitivity ..... 8 dBf (0.7  $\mu$ V/75  $\Omega$ , mono, S/N: 30 dB)  
Signal-to-noise ratio ..... 75 dB (IHF-A network)  
Distortion ..... 0.3 % (at 65 dBf, 1 kHz, stereo)  
0.1 % (at 65 dBf, 1 kHz, mono)  
Frequency response ..... 30 Hz to 15 000 Hz ( $\pm$ 3 dB)  
Stereo separation ..... 45 dB (at 65 dBf, 1 kHz)

### AM tuner

Frequency range ..... 530 kHz to 1 710 kHz (10 kHz)  
Usable sensitivity ..... 18  $\mu$ V (S/N: 20 dB)  
Signal-to-noise ratio ..... 65 dB (IHF-A network)

### CEA2006 Specifications



Power output ..... 14 W RMS  $\times$  4 Channels  
(4  $\Omega$  and  $\leq$  1 % THD+N)  
S/N ratio ..... 91 dBA (reference: 1 W into 4  $\Omega$ )



### Note

Specifications and design are subject to possible modifications without notice due to improvements. ■

## ● AVIC-F700BT/XS/EW5

A

### General

Rated power source ..... 14.4 V DC  
(allowable voltage range:  
12.0 V to 14.4 V DC)

Earthing system ..... Negative type

Maximum current consumption

..... 10.0 A

Backup current ..... 6.5 mA or less

Dimensions (W × H × D):

DIN

Chassis ..... 178 × 100 × 149 mm

Nose ..... 188 × 117 × 16 mm

D

Chassis ..... 178 × 100 × 157 mm

Nose ..... 170 × 96 × 8 mm

Weight ..... 2.6 kg

NAND flash memory ..... 2 GB

B

### Navigation

GPS Receiver:

System ..... L1, C/Acode GPS  
SPS (Standard Positioning  
Service)

Reception system ..... 30-channel multi-channel  
reception system

Reception frequency .... 1575.42 MHz

Sensitivity ..... -140 dBm (typ)

Position update frequency

..... Approx. once per second

GPS aerial:

Aerial ..... Micro strip flat aerial/right-  
handed helical polarisation

Aerial cable ..... 5.0 m

Dimensions (W × H × D)

..... 33 × 15 × 36 mm

Weight ..... 96 g

C

### Display

Screen size/aspect ratio ..... 5.8 inch wide/16:9  
(effective display area: 128  
× 72 mm)

Pixels ..... 384 000 (800 × 480)

Display method ..... TFT Active matrix driving

Color system ..... NTSC/PAL compatible

Durable temperature range:

Power on ..... -10 °C to +60 °C

Power off ..... -20 °C to +80 °C

E

### Audio

Maximum power output ..... 50 W × 4

50 W × 2 ch/4 Ω + 70 W ×  
1 ch/2 Ω (for subwoofer)

Continuous power output ... 22 W × 4 (50 Hz to 15 kHz,  
5%THD, 4 Ω LOAD, Both  
Channels Driven)

Load impedance ..... 4 Ω (4 Ω to 8 Ω [2 Ω for 1 ch]  
allowable)

Preout output level (max) .... 2.2 V

Preout impedance ..... 1 kohm

Equaliser (3-Band Parametric Equaliser):

Low

Frequency ..... 40/80/100/160 Hz

Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB  
when boosted)

Gain ..... ±12 dB

Mid

Frequency ..... 200 Hz/500 Hz/1 kHz/2 kHz

Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB  
when boosted)

Gain ..... ±12 dB

High

Frequency ..... 3.15/8/10/12.5 kHz

Q Factor ..... 0.35/0.59/0.95/1.15 (+6 dB  
when boosted)

Gain ..... ±12 dB

Loudness contour:

Low ..... +3.5 dB (100 Hz), +3 dB  
(10 kHz)

Mid ..... +10 dB (100 Hz), +6.5 dB  
(10 kHz)

High ..... +11 dB (100 Hz), +11 dB  
(10 kHz)  
(volume: -30 dB)

HPF:

Frequency ..... 50/80/125 Hz

Slope ..... -12 dB/oct

Subwoofer:

Frequency ..... 50/80/125 Hz

Slope ..... -18 dB/oct

Gain ..... ±12 dB

Phase ..... Normal/Reverse

Bass boost:

Gain ..... 0 dB to +12 dB

F

CD drive

System	Compact disc audio system
Usable discs	Compact disc
Signal-to-noise ratio	94 dB (1 kHz) (IEC-A network)
MP3 decoding format	MPEG-1&2 AUDIO LAYER-3
WMA decoding format	Ver.7,7.1,8,9,10 (2 ch audio) (Windows Media Player)
AAC decoding format	MPEG-4 AAC (iTunes encoded only)
WAVE SIGNAL FORMAT	Linear-PCM, MS ADPCM (Non Compressed)

USB

USB standard spec.	USB 2.0 High Speed
Max current supply	500 mA
Max capacity memory	2 GB
File system	FAT16, FAT32
USB class	Mass storage class
Decoding format	MP3/WMA/AAC/WAVE/MPEG4

SD

Max capacity memory	8 GB
File system	FAT16, FAT32
Decoding format	MP3/WMA/AAC/WAVE/MPEG4

Bluetooth

Version	Bluetooth 2.1 certified
Output power	+4 dBm Max. (Power class 2)

FM tuner

Frequency range	87.5 MHz to 108.0 MHz
Usable sensitivity	8 dBf (0.7 μV/75 Ω, mono, S/N: 30 dB)
Signal-to-noise ratio	75 dB (IEC-A network)
Distortion	0.3 % (at 65 dBf, 1 kHz, stereo) 0.1 % (at 65 dBf, 1 kHz, mono)
Frequency response	30 Hz to 15 000 Hz (±3 dB)
Stereo separation	45 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	531 kHz to 1 602 kHz (9 kHz)
Usable sensitivity	18 μV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

LW tuner

Frequency range	153 kHz to 281 kHz (9 kHz)
Usable sensitivity	30 μV (S/N: 20 dB)
Signal-to-noise ratio	65 dB (IEC-A network)

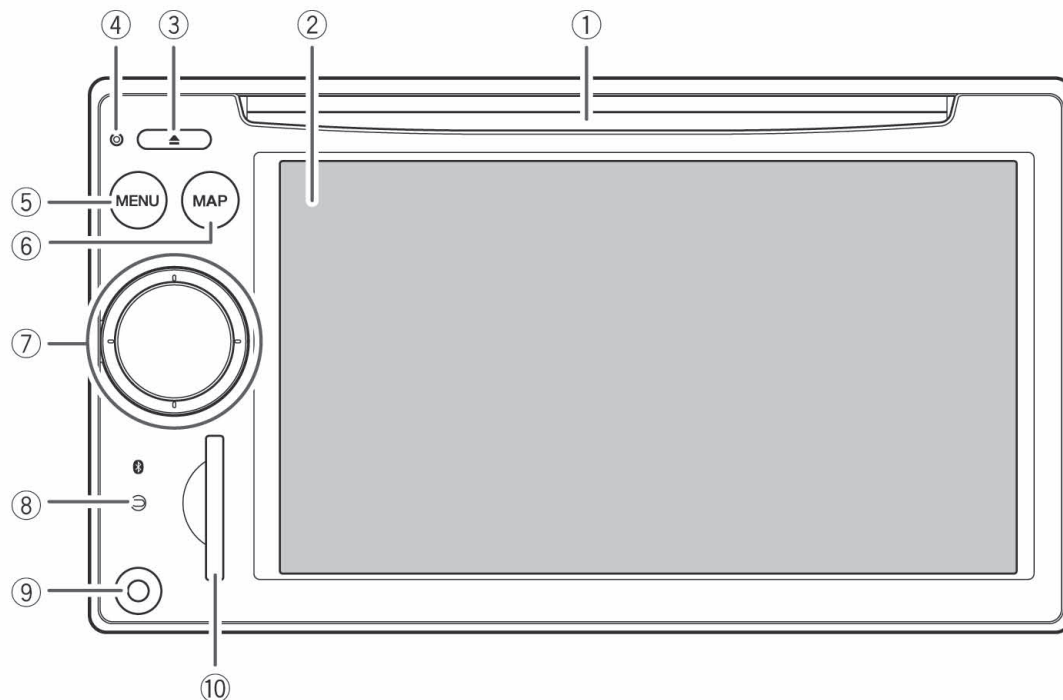


Specifications and design are subject to possible modifications without notice due to improvements.

2.2 DISC/CONTENT FORMAT



## 2.3 PANEL FACILITIES



### Checking part names and functions

This chapter gives information about the names of the parts and the main features using the buttons.

#### ① Disc loading slot

Insert a disc to play.

➡ For details concerning operations, refer to *Inserting/ejecting a disc*.

#### ② LCD screen

#### ③ EJECT button

#### ④ RESET button

➡ For details concerning operations, refer to *Resetting the microprocessor*.

#### ⑤ MENU button

Press **MENU** button to display the “**Top Menu**”.

Press and hold to display the “**Screen Calibration**” screen.

➡ For details concerning operations, refer to *Adjusting the response positions of the touch panels (touch panel calibration)*.

#### ⑥ MAP button

Press to view the map screen.

Press and hold to display the “**Picture Adjustment**” screen.

➡ For details concerning operations, refer to *Adjusting the screen brightness*.

#### ⑦ MULTI-CONTROL

##### Rotating;

Adjusts the AV (Audio and Video) source volume.

##### Moving upward or downward once;

Changes the map scale one step at a time.



**Keep moving upward or downward;**

Changes the map scale continuously.

- ❑ This operation is available only while the map screen is displayed.

**Moving MULTI-CONTROL to the left or right;**

Allows you to change the frequency one step at a time; operates track search controls.

**Keep moving MULTI-CONTROL to the left or right;**

Allows you to perform manual seek tuning, fast forward or reverse.

**Pressing the centre of MULTI-CONTROL;**

Allows you to hear the previous route guidance.

- ❑ When your phone is paired to the navigation system, pressing its centre allows you to answer an incoming call or end the phone call.

**Keep pressing the centre of MULTI-CONTROL;**

Mutes the AV (Audio and Video) source. To cancel the muting, press and hold it again.

- ⑧ **Bluetooth connection status indicator**  
Lights up when your phone is paired to the navigation system by Bluetooth wireless technology.

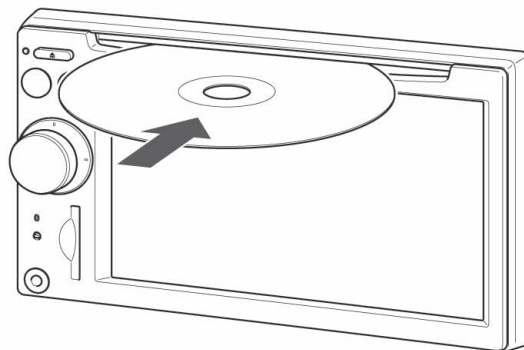
⑨ **"AV2" input jack**

This is the "AV2" input terminal. Use the CD-RM10 (sold separately) to connect the external video component.

- ❑ To connect your iPod by using USB interface cable for iPod (CD-IU230V), use "AV1" input (RCA) on the backside. ❑

**Inserting/ejecting a disc****Inserting a disc**

- Insert a disc into the disc loading slot.



- ❑ The built-in drive plays one standard 12-cm or 8-cm (single) disc at a time. Do not use an adapter when playing 8-cm discs.
- ❑ Do not insert anything other than a disc into the disc loading slot.

**Ejecting a disc**

- Press EJECT button.

The disc is ejected. ❑

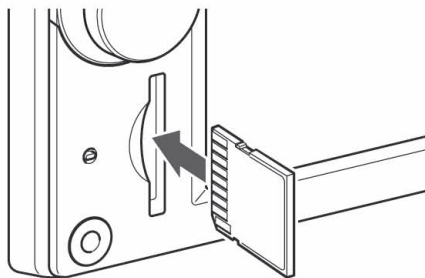
**Inserting and ejecting an SD memory card****CAUTION**

- Keep the dummy SD card out of the reach of small children to prevent them from accidentally swallowing it.
- To prevent data loss and damage to the storage device, never remove it from this navigation system while data is being transferred.
- If data loss or corruption occurs on the storage device for any reason, it is usually not possible to recover the data. Pioneer accepts no liability for damages, costs or expenses arising from data loss or corruption.

## Inserting an SD memory card

### ● Insert an SD memory card into the SD card slot.

Insert it with the contact surface facing to the left and press the card until it clicks and completely locks.

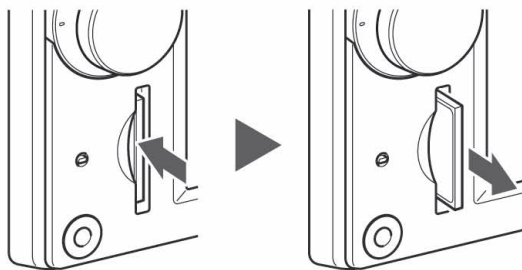


- ☐ This navigation system is not compatibility with MMC and SDHC cards.
- ☐ Compatibility with all SD memory card is not guaranteed.
- ☐ Optimum performance of this unit may not be obtained depending on the SD memory card.
- ☐ Do not insert anything other than SD memory cards or dummy SD cards into the SD card slot.

## Ejecting an SD memory card

### 1 Press the SD memory card until it clicks.

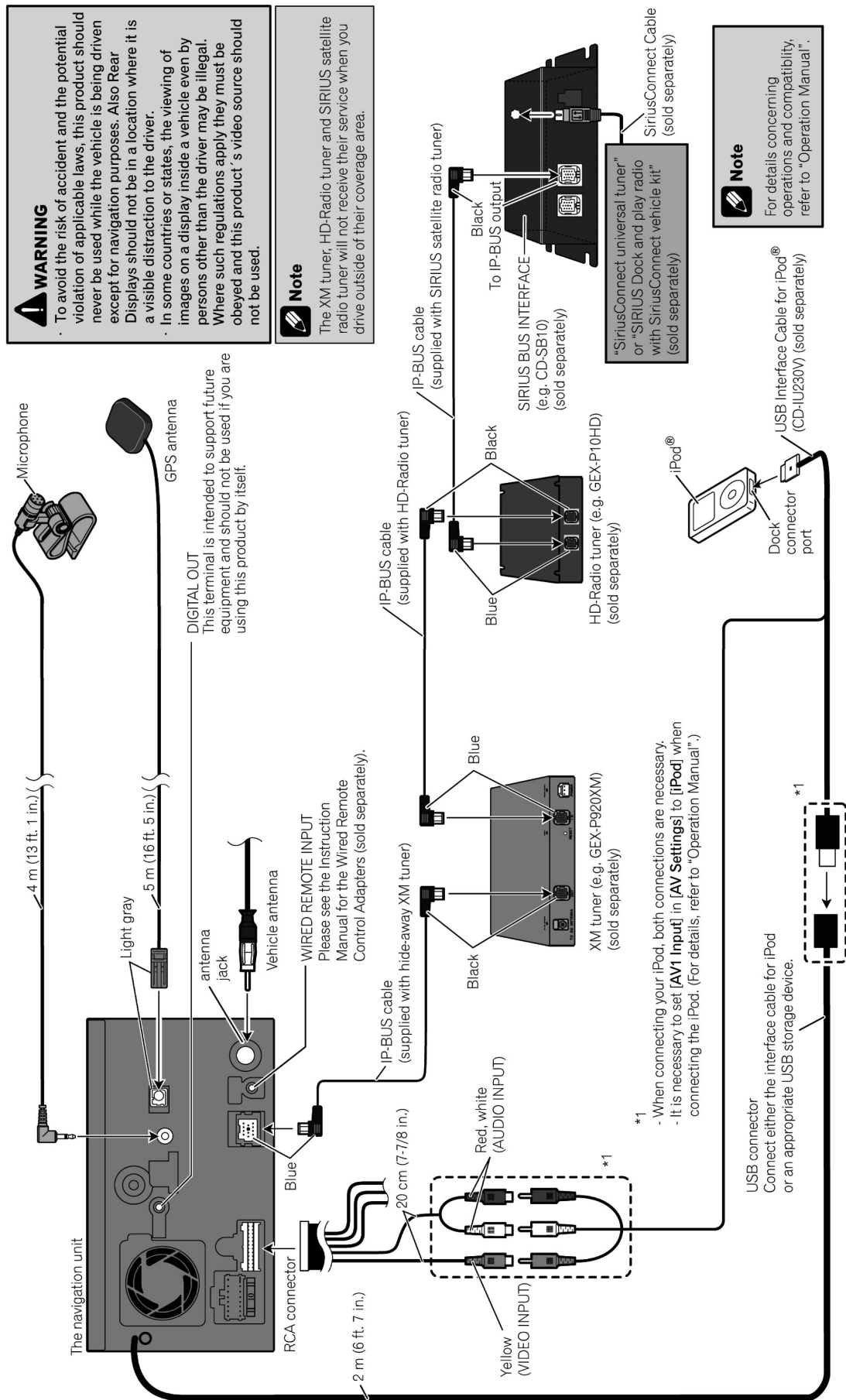
The SD memory card is ejected.



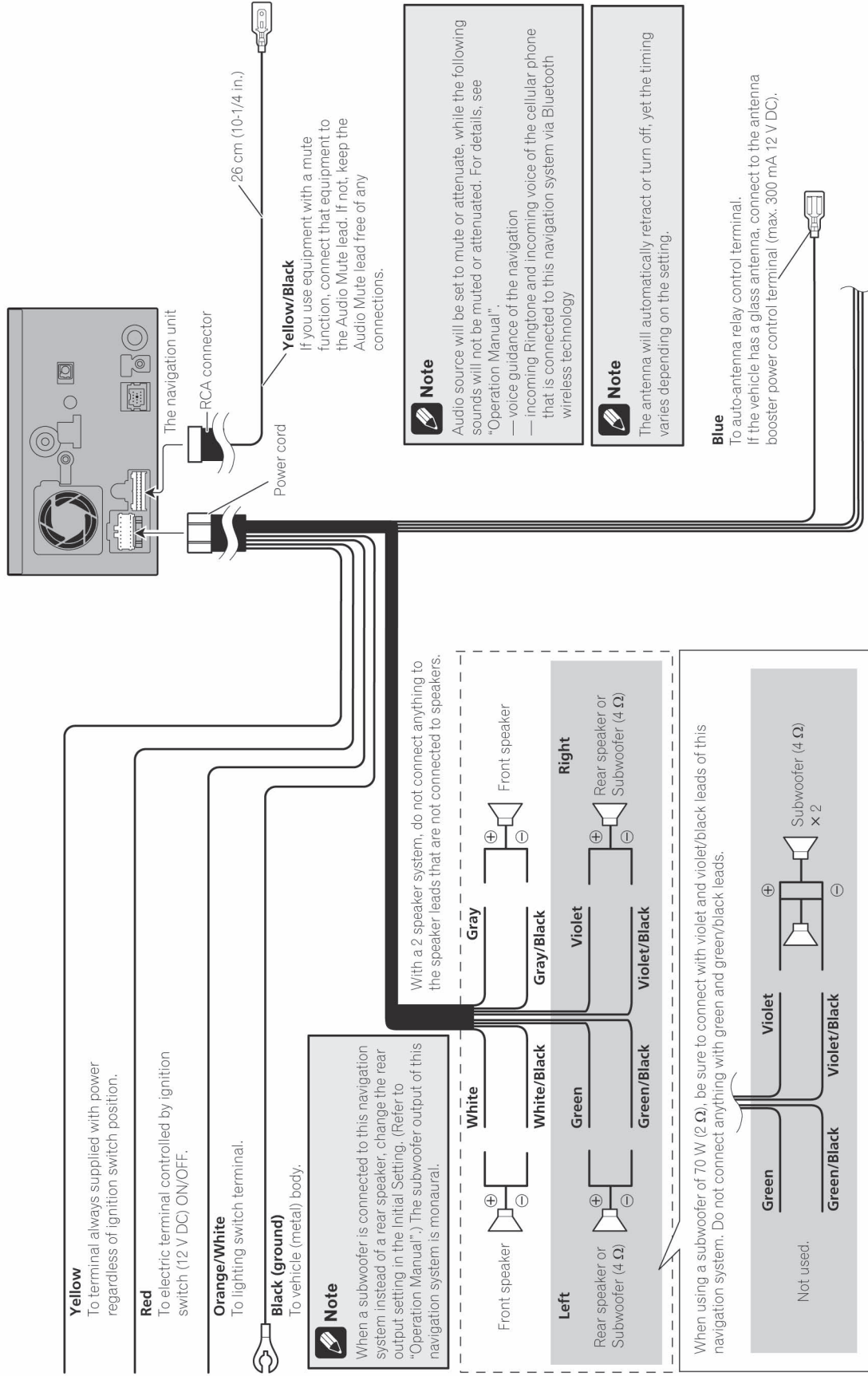
### 2 Pull out the SD memory card.

- ☐ Insert the dummy SD card to keep the SD card slot free of dust when the SD memory card is not inserted. ☐

## 2.4 CONNECTION DIAGRAM



## Connecting the power cord



## 3. BASIC ITEMS FOR SERVICE

### 3.1 CHECK POINTS AFTER SERVICING

To keep the product quality after servicing, please confirm following check points.

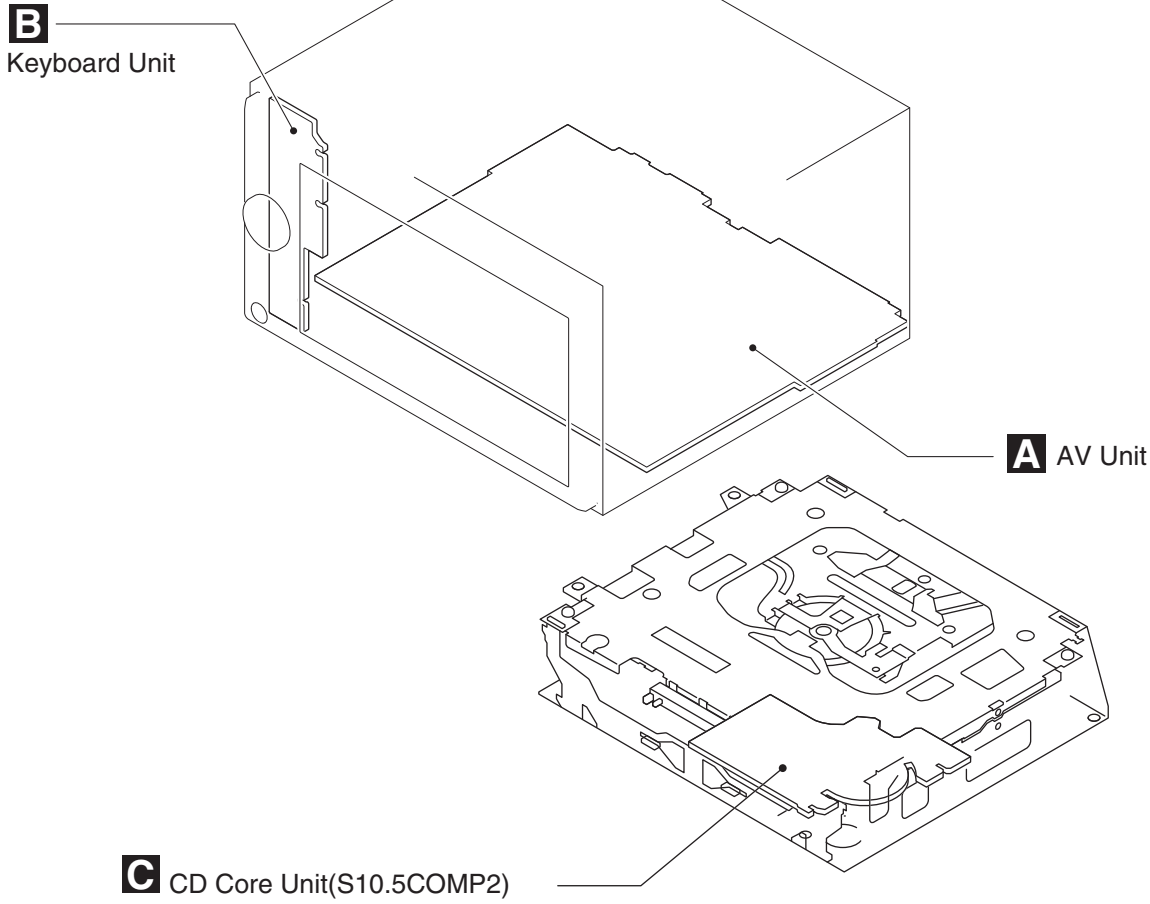
No.		Procedures	Item to be confirmed
1		Confirm whether the customer complain has been solved. If the customer complain occurs with the specific media, use it for the operation check.	The customer complain must not be reappeared. Display, video, audio and operations must be normal.
2	CD	Play back a CD. (Track search)	Display, audio and operations must be normal.
3	FM/AM tuner	Check FM/AM tuner action. (Seek, Preset) Switch band to check both FM and AM.	Display, audio and operations must be normal.
4	GPS positioning	Connect GPS antenna to the product, and check whether the current location is correct.	Current location must be correct. Display and operations must be normal.
5	Map display Touch-panel operation Remote-control operation	Check functions of map scale change and map scroll.	Display and operations must be normal.
6		data added during the operating check. Check whether no media (CD etc.) is inside the product.	Make sure to delete data added during the operating check. The media used for the operating check must be ejected.
7		Appearance check	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding video and audio:

Item to be checked regarding video	Item to be checked regarding audio
Block-noise	Distortion
Horizontal noise	Noise
Dot noise	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

1 2 3 4

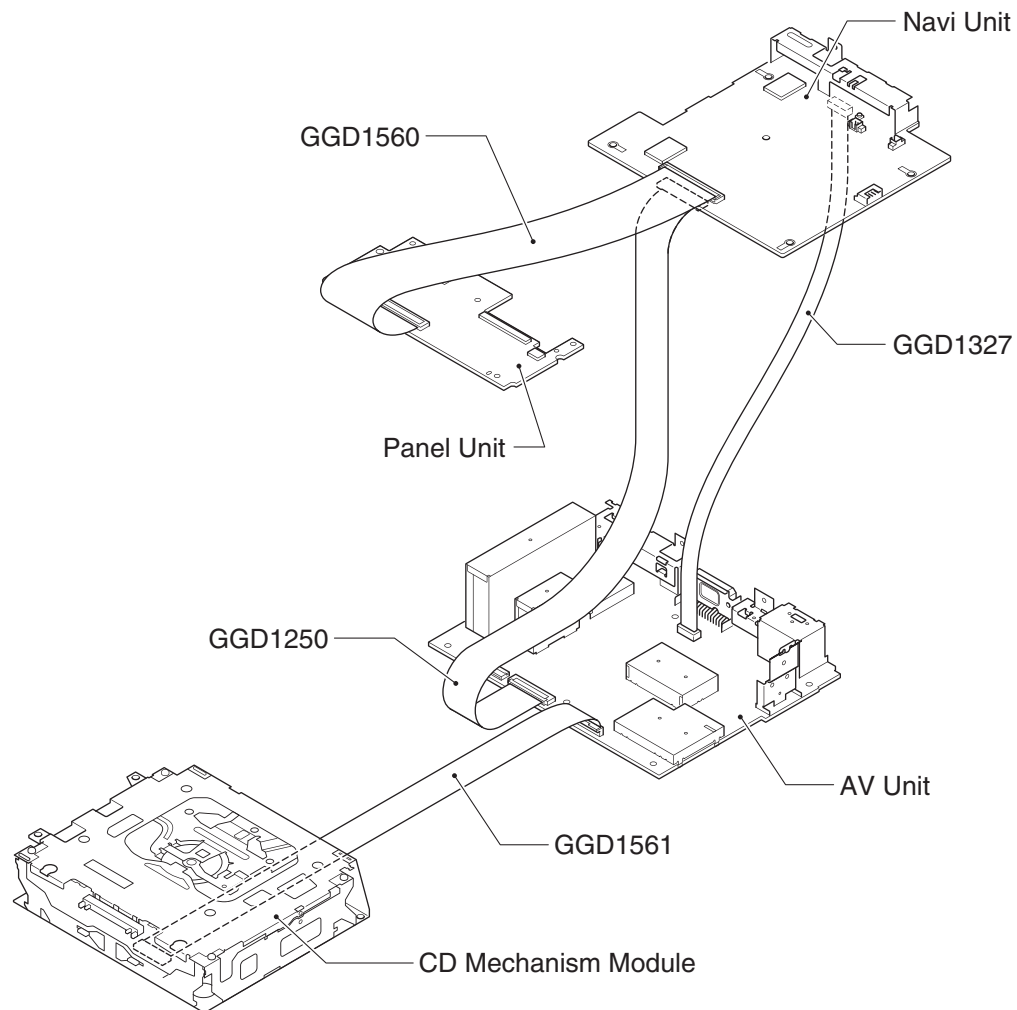
# 3.2 PCB LOCATIONS



D

Unit Number	:	CWN3170(UC)
Unit Number	:	CWN3168(EW5)
Unit Name	:	AV Unit
Unit Number	:	
Unit Name	:	Keyboard Unit
Unit Number	:	CWX3514
Unit Name	:	CD Core Unit(S10.5COMP2)

### 3.3 JIGS LIST



#### ● Jigs List

Name	Jig No.	Remarks
15P FFC	GGD1123	Navi Unit <---> SD Unit
74P FFC	GGD1560	Navi Unit <---> Panel Unit
50P FFC	GGD1250	Navi Unit <---> AV Unit
20P Extension Cable	GGD1327	Navi Unit <---> AV Unit
TORX screwdriver	GGK1068	T8 (For top cover)
15P BBR	GGD1561	AV Unit <---> CD Mechanism Module
Test Disc	TCD-782	Checking the grating
L.P.F.		Checking the grating (Two pieces)
Service Data Disc	GGV1322	for Test Mode, Test Disc

#### ● Grease List

Name	Grease No.	Remarks
Grease	GEM1024	CD Mechanism Module
Grease	GEM1045	CD Mechanism Module

### 3.4 CLEANING



A

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Portions to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

B

■

C

■

D

■

E

■

F



■

5

■

6

■

7

■

8

■

A

■

B

■

C

■

D

■

E

■

F

■

5

■

6

■

7

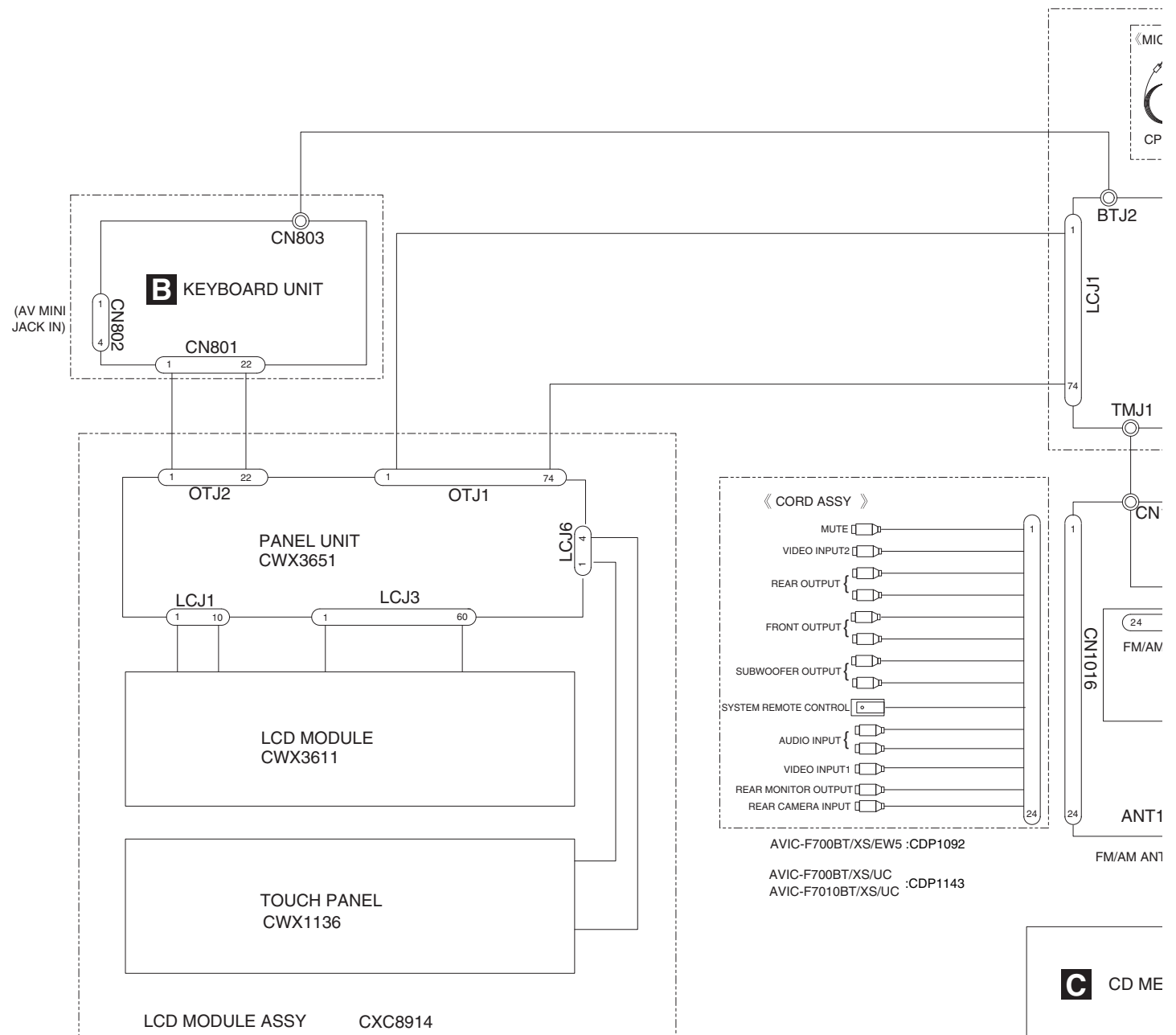
■

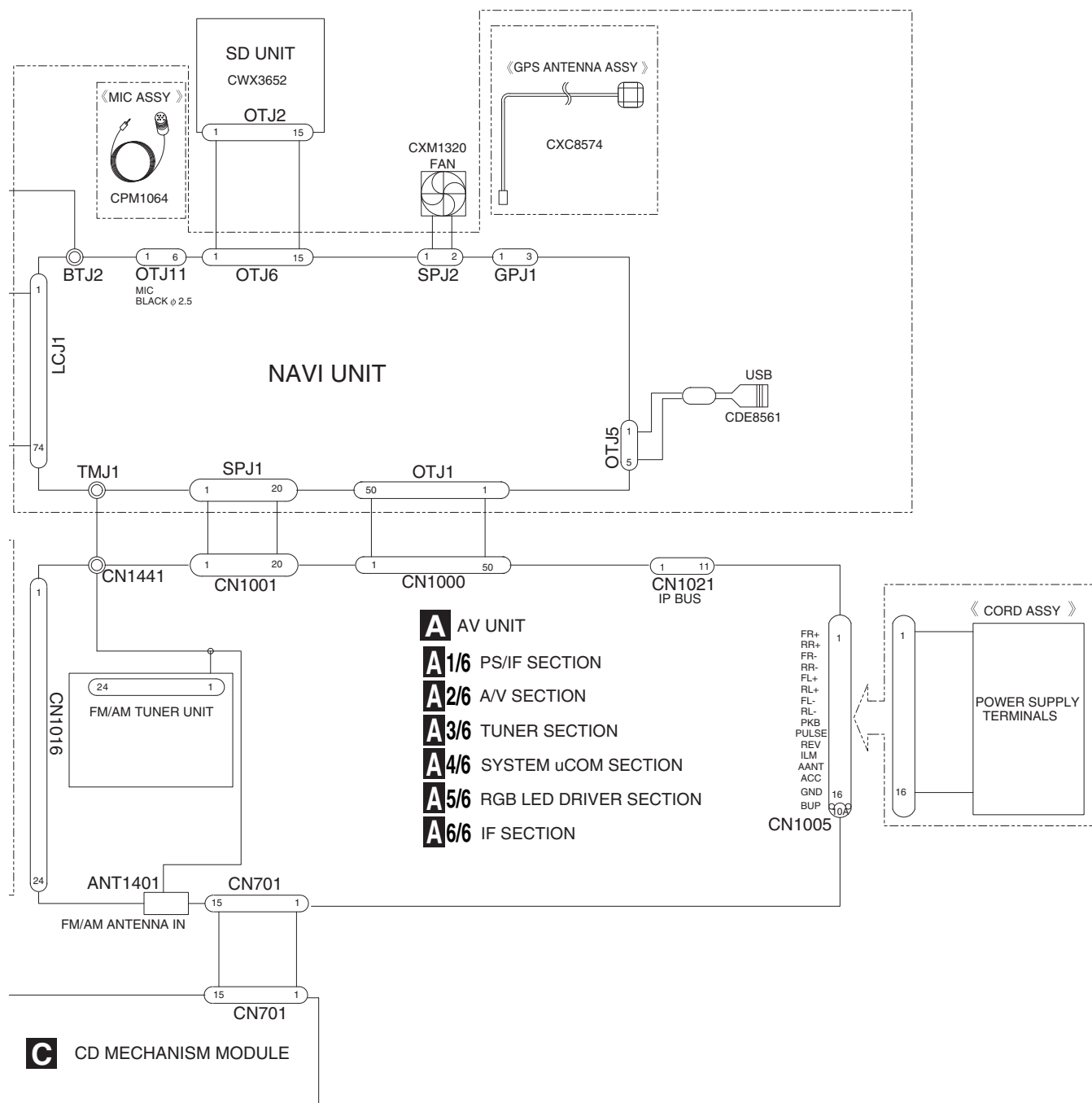
8

■

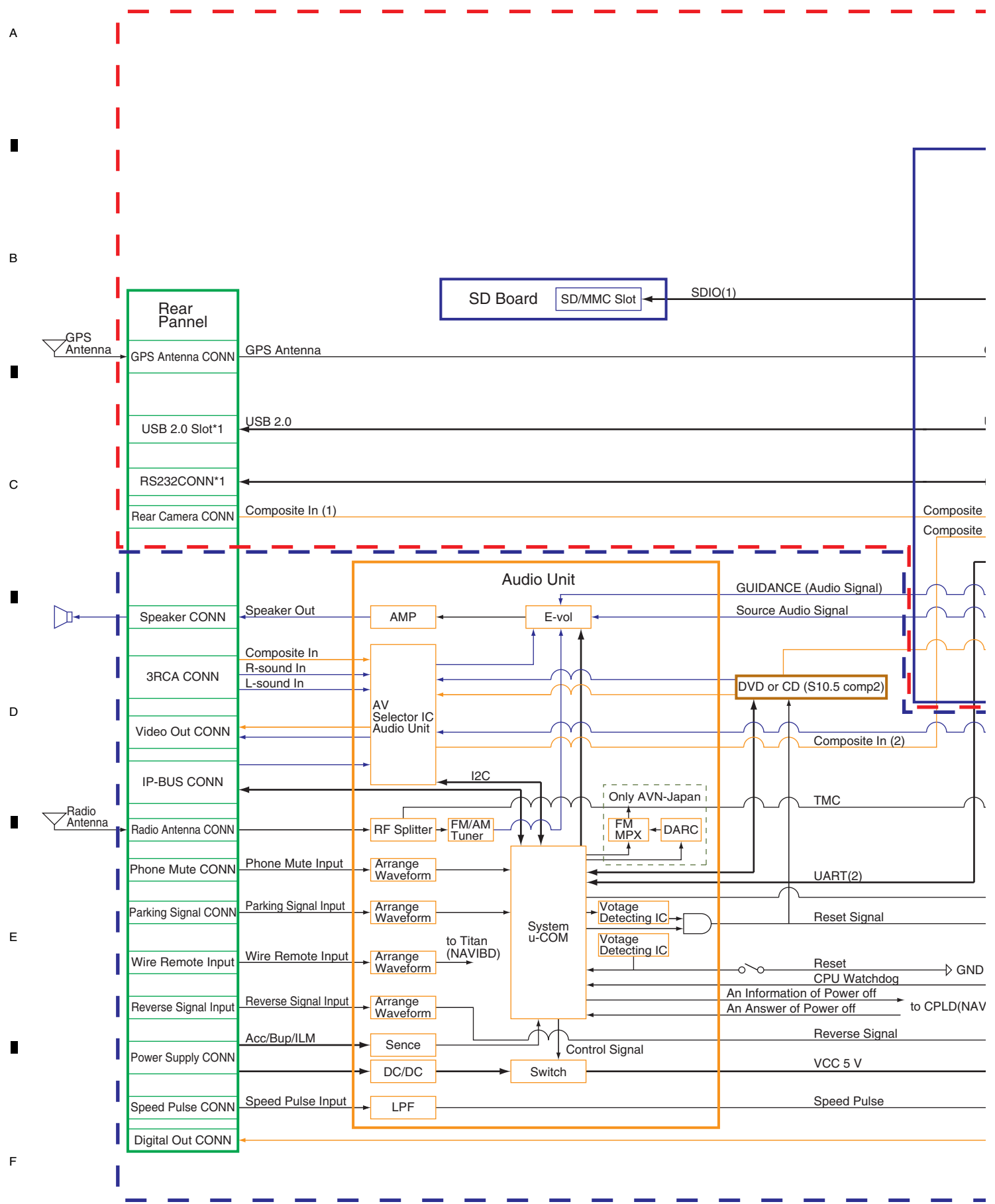
#### 4.1 OVERALL CONNECTION DIAGRAM

#### 4.1 OVERALL CONNECTION DIAGRAM



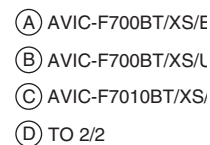


4.2 BLOCK DIAGRAM





FM/AM TUNER UNIT

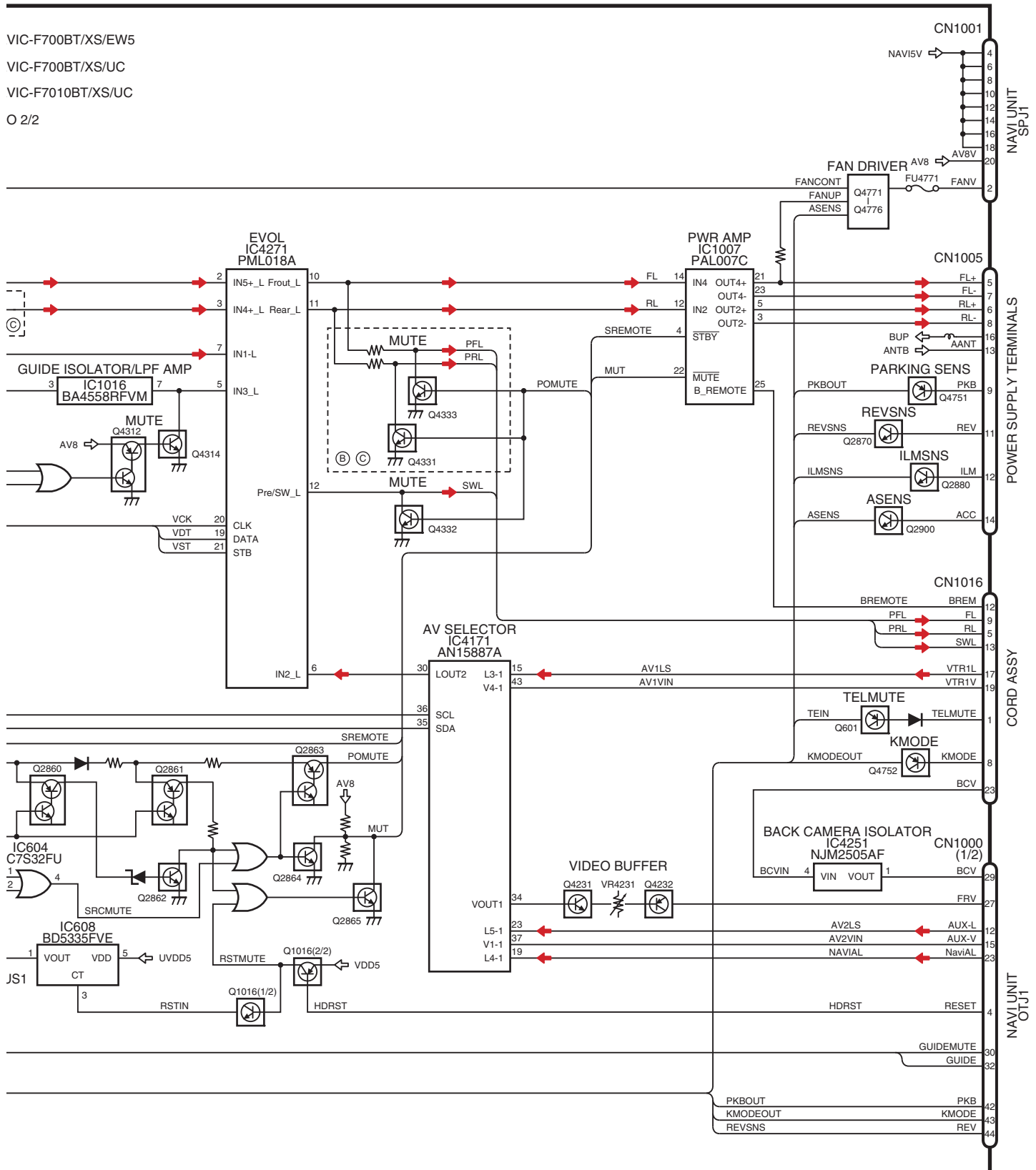


VIC-F700BT/XS/EW5

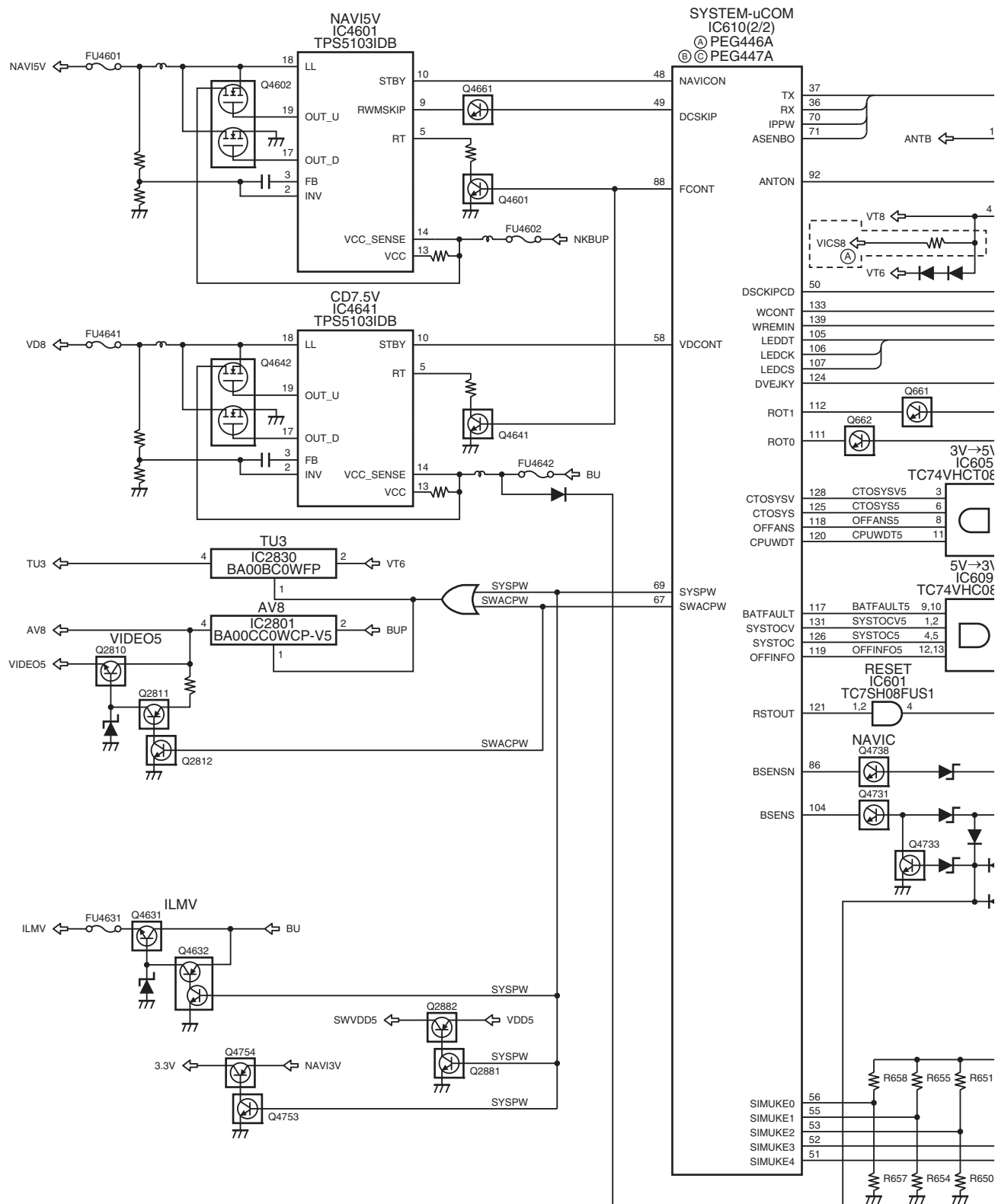
VIC-F700BT/XS/UC

VIC-F7010BT/XS/UC

O 2/2



A

**A** AV UNIT(2/2)





A

B

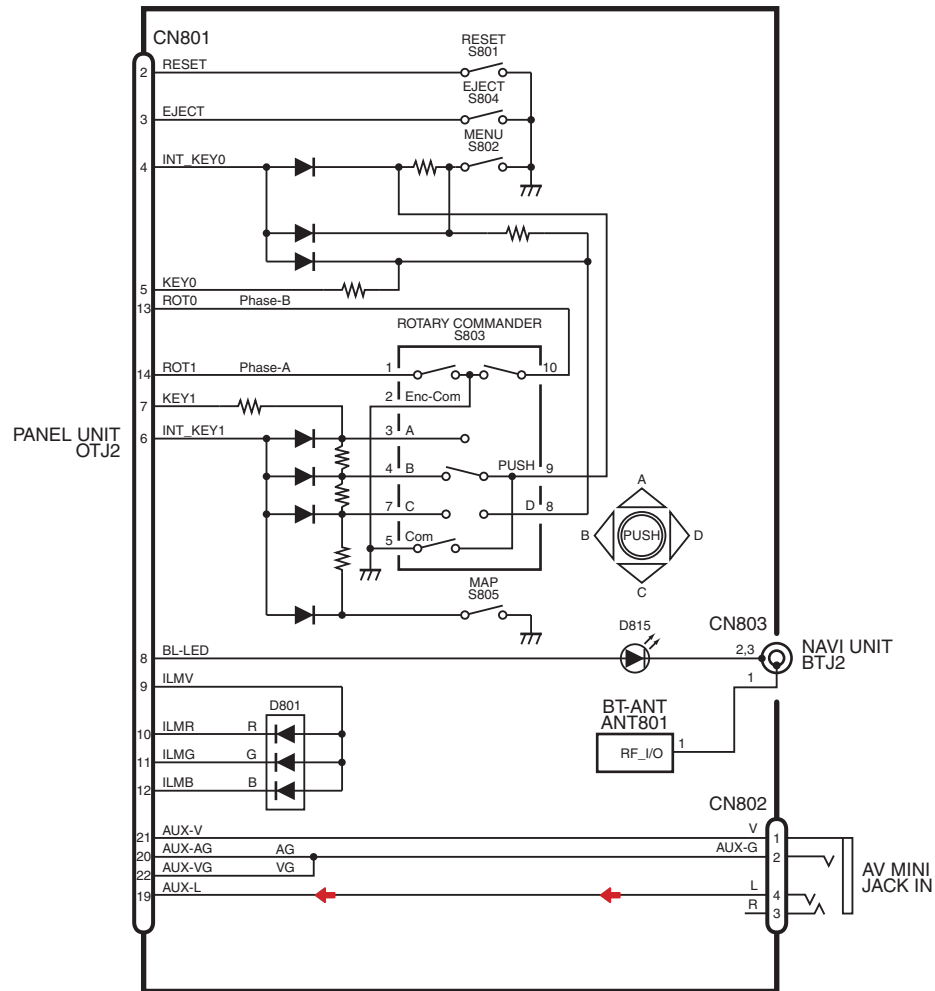
C

D

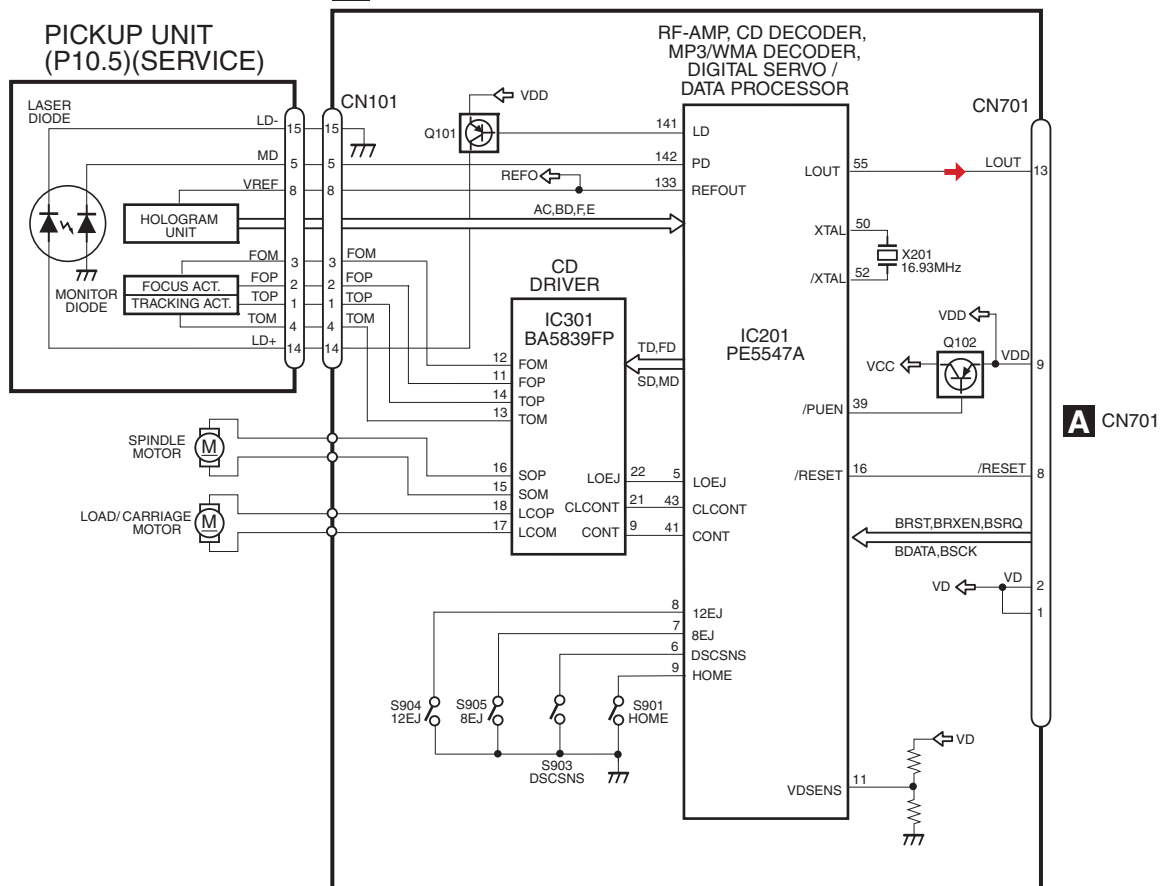
E

F

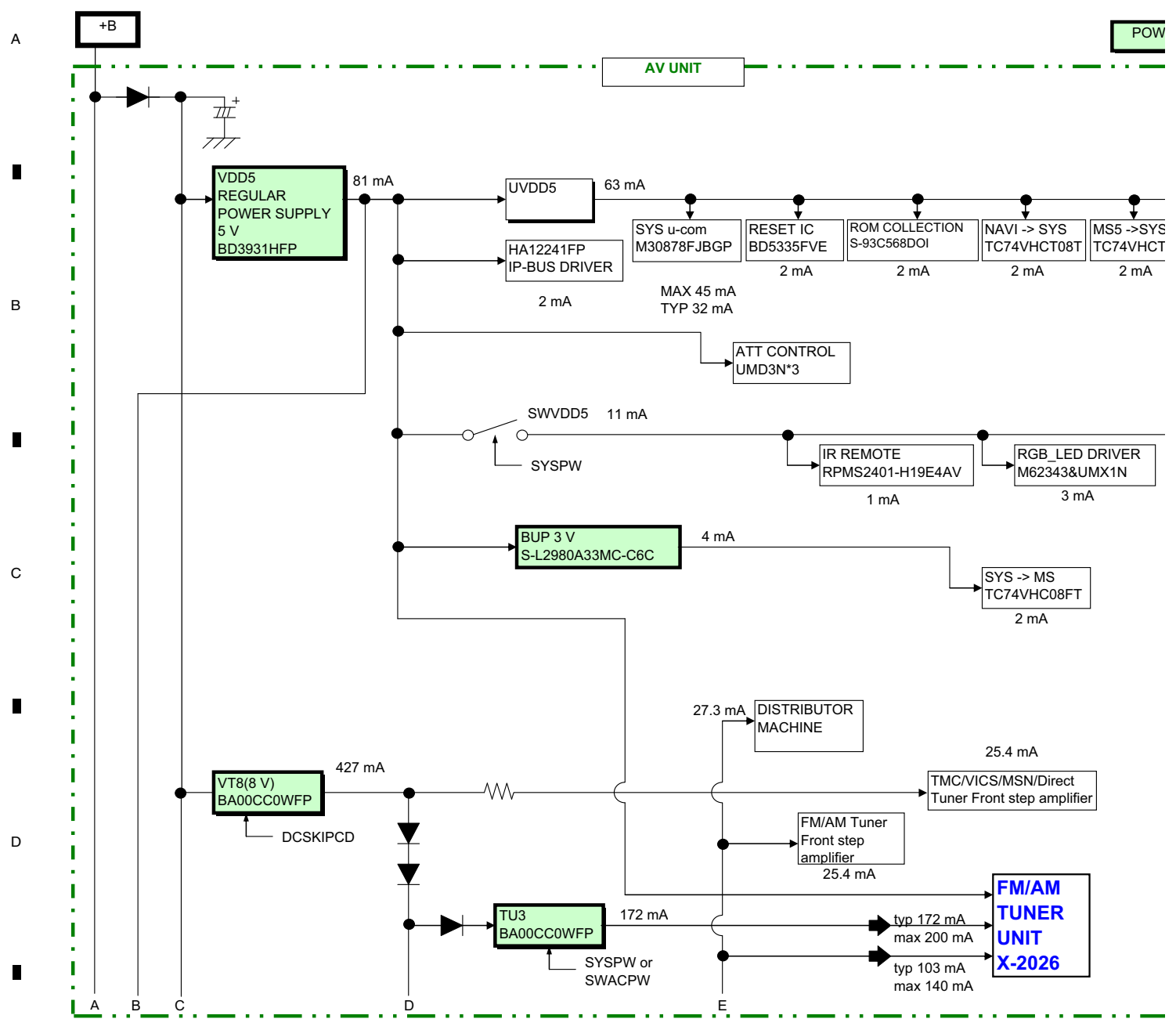
## B KEYBOARD UNIT

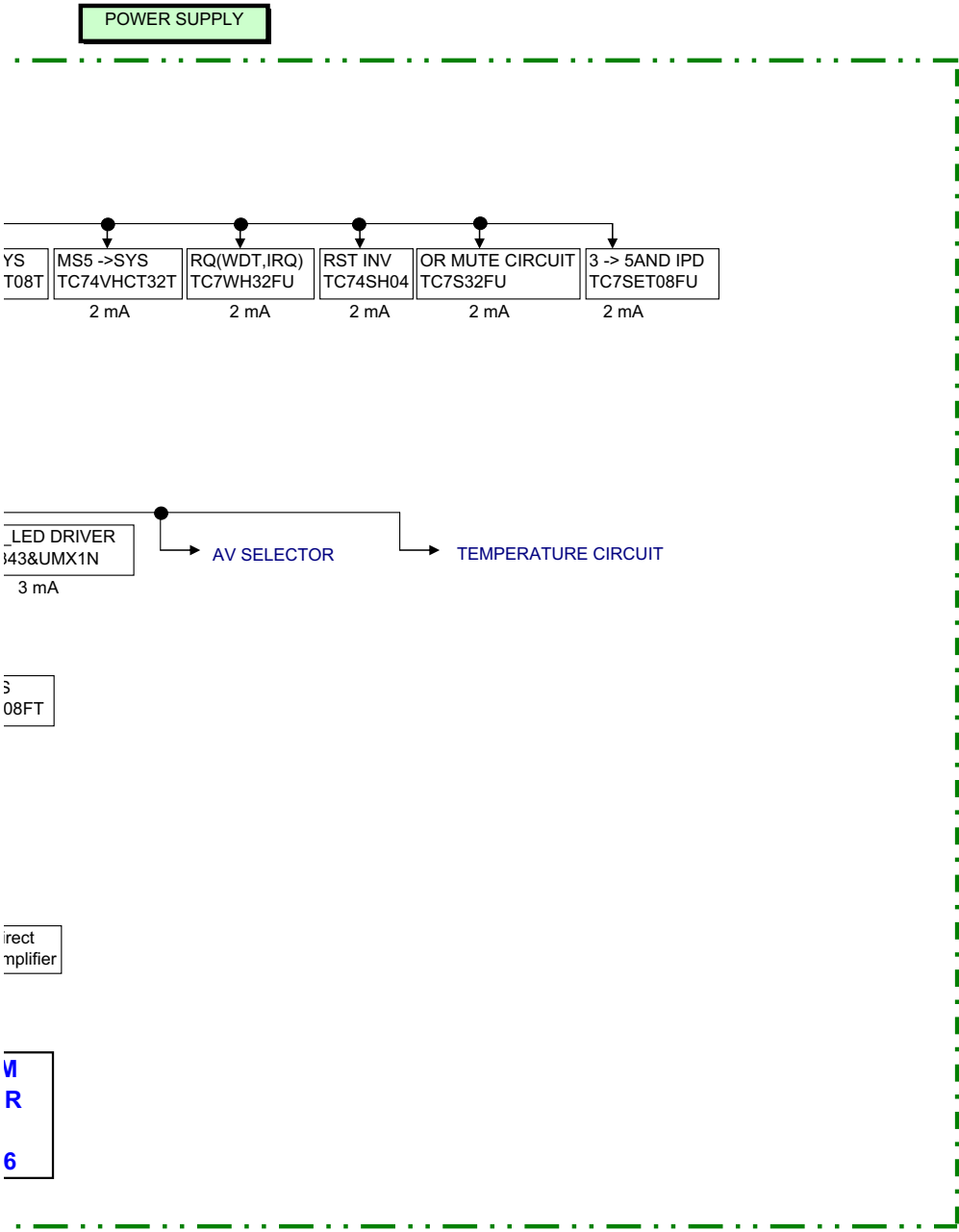


**C** CD CORE UNIT(S10.5COMP2)



4.3 POWER SUPPLY SYSTEM FIGURE





A

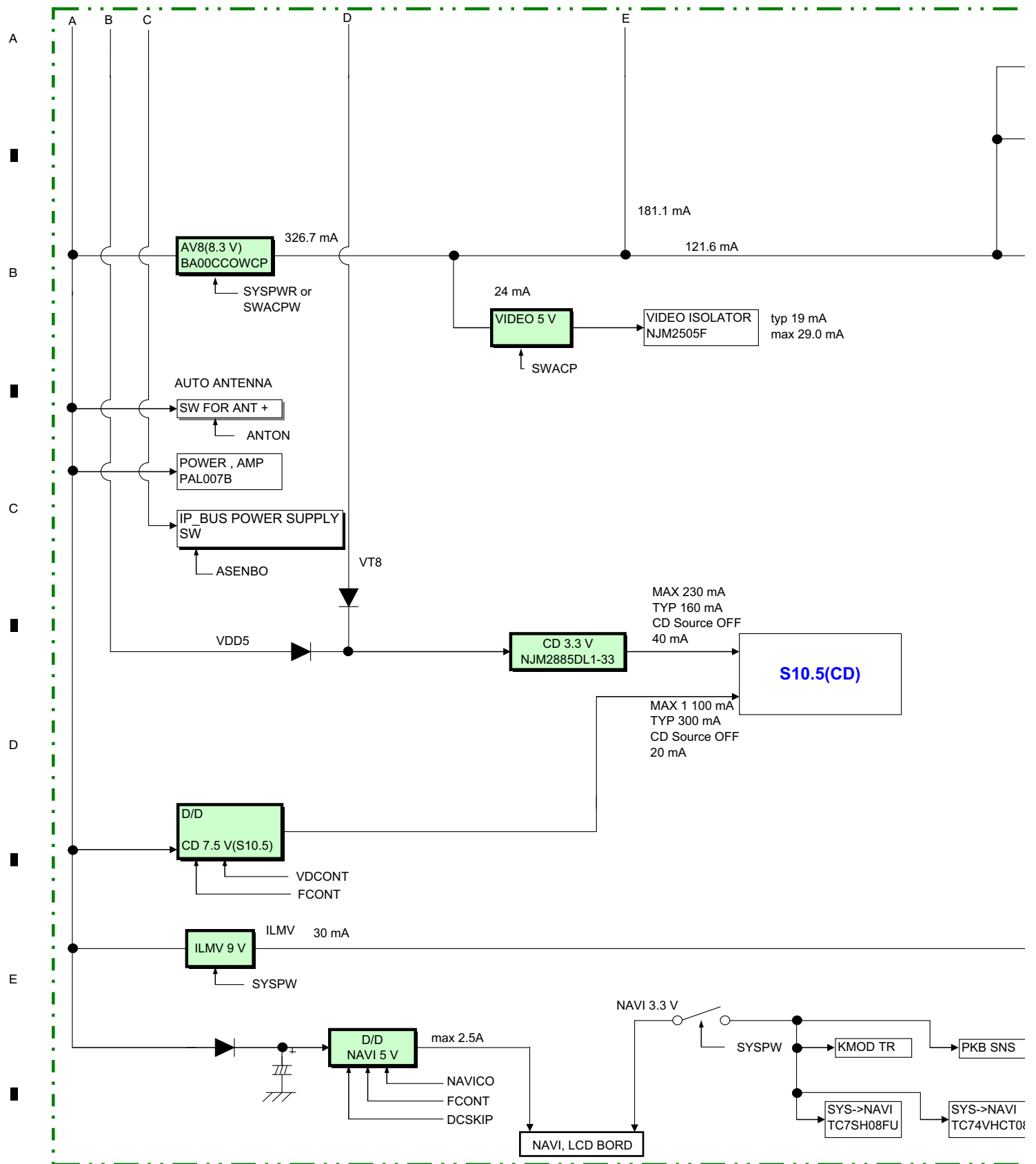
B

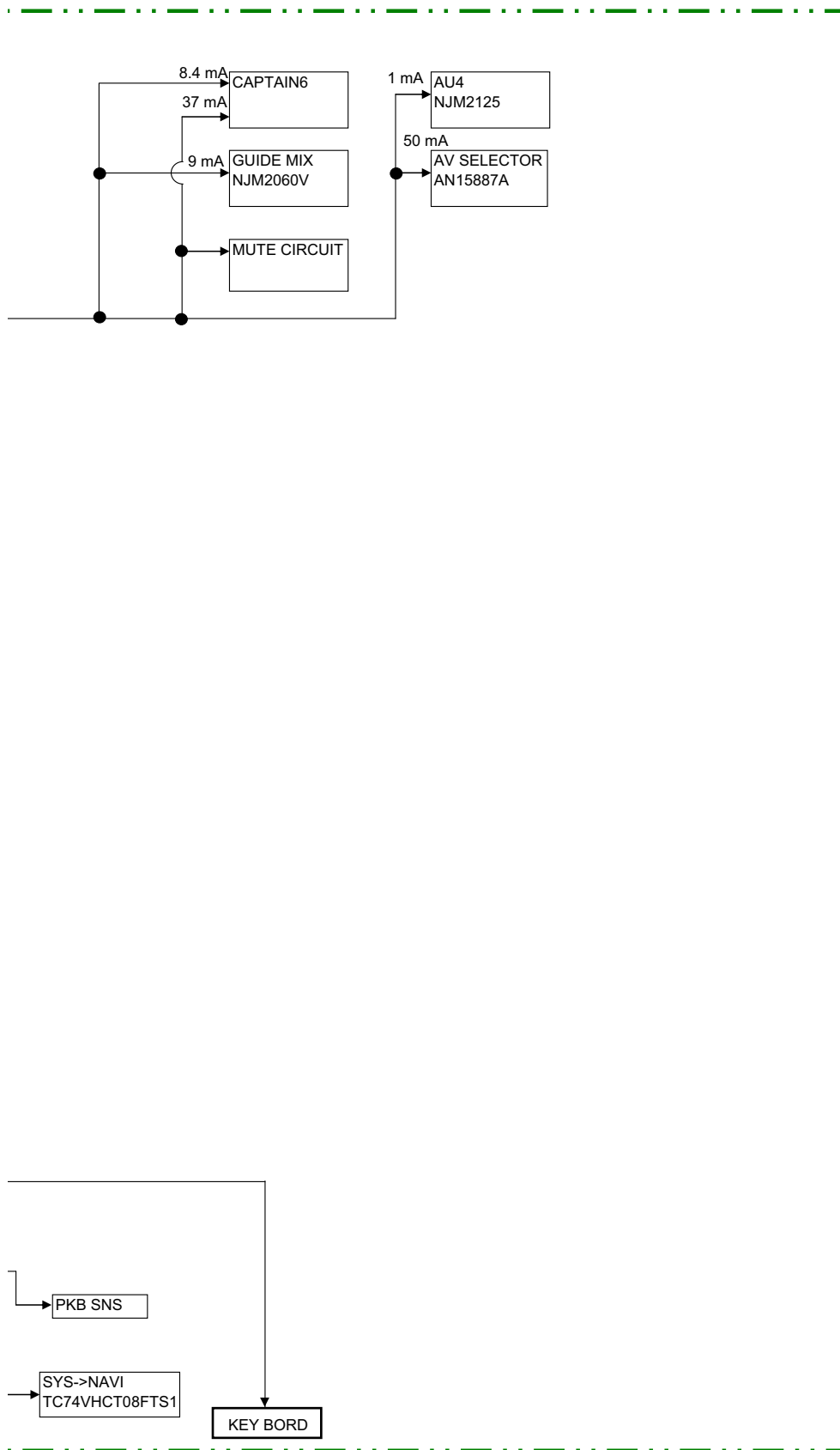
C

D

E

F





A

B

C

D

E

F

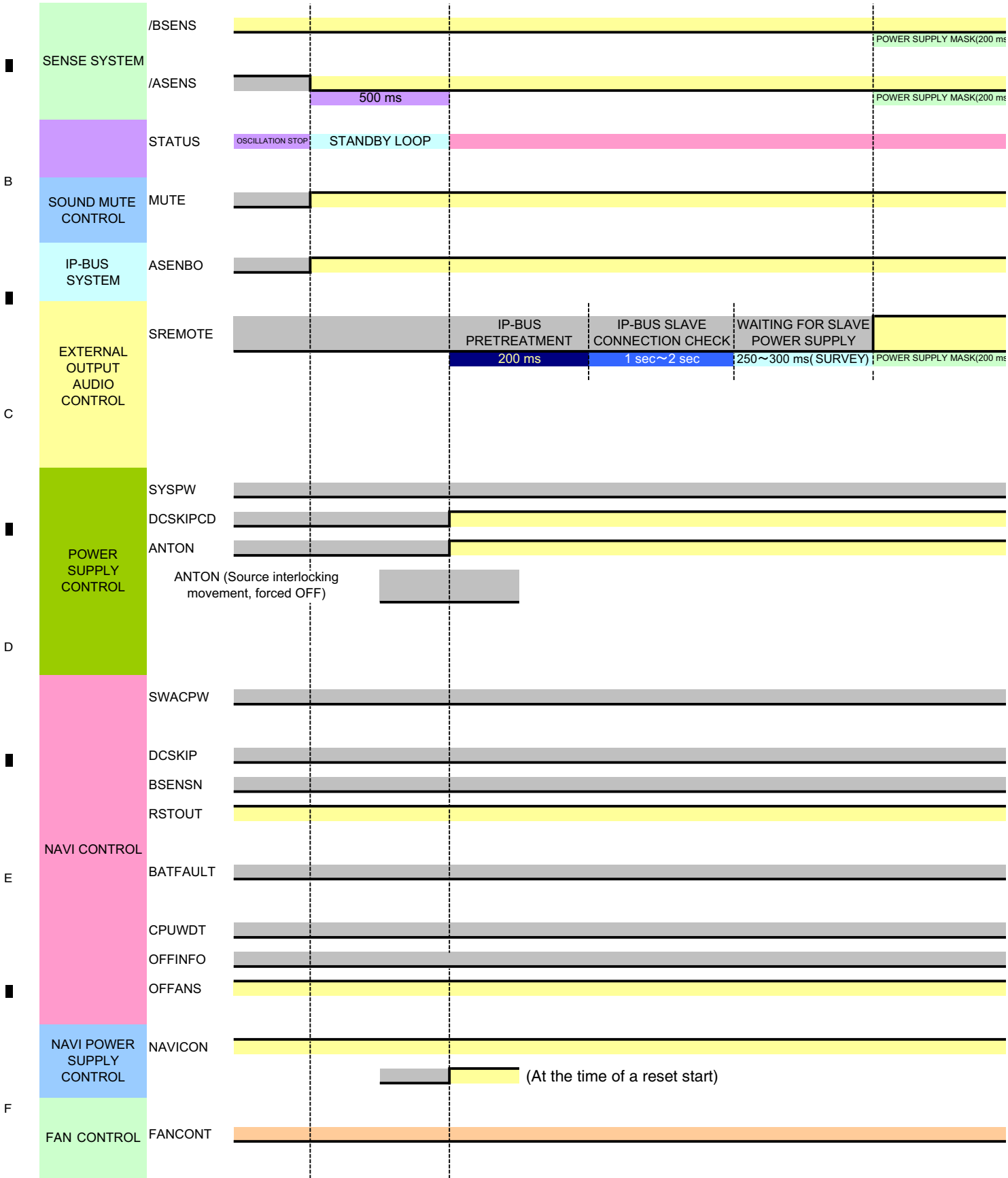
1234

# 5. DIAGNOSIS

## 5.1 OPERATIONAL FLOWCHART

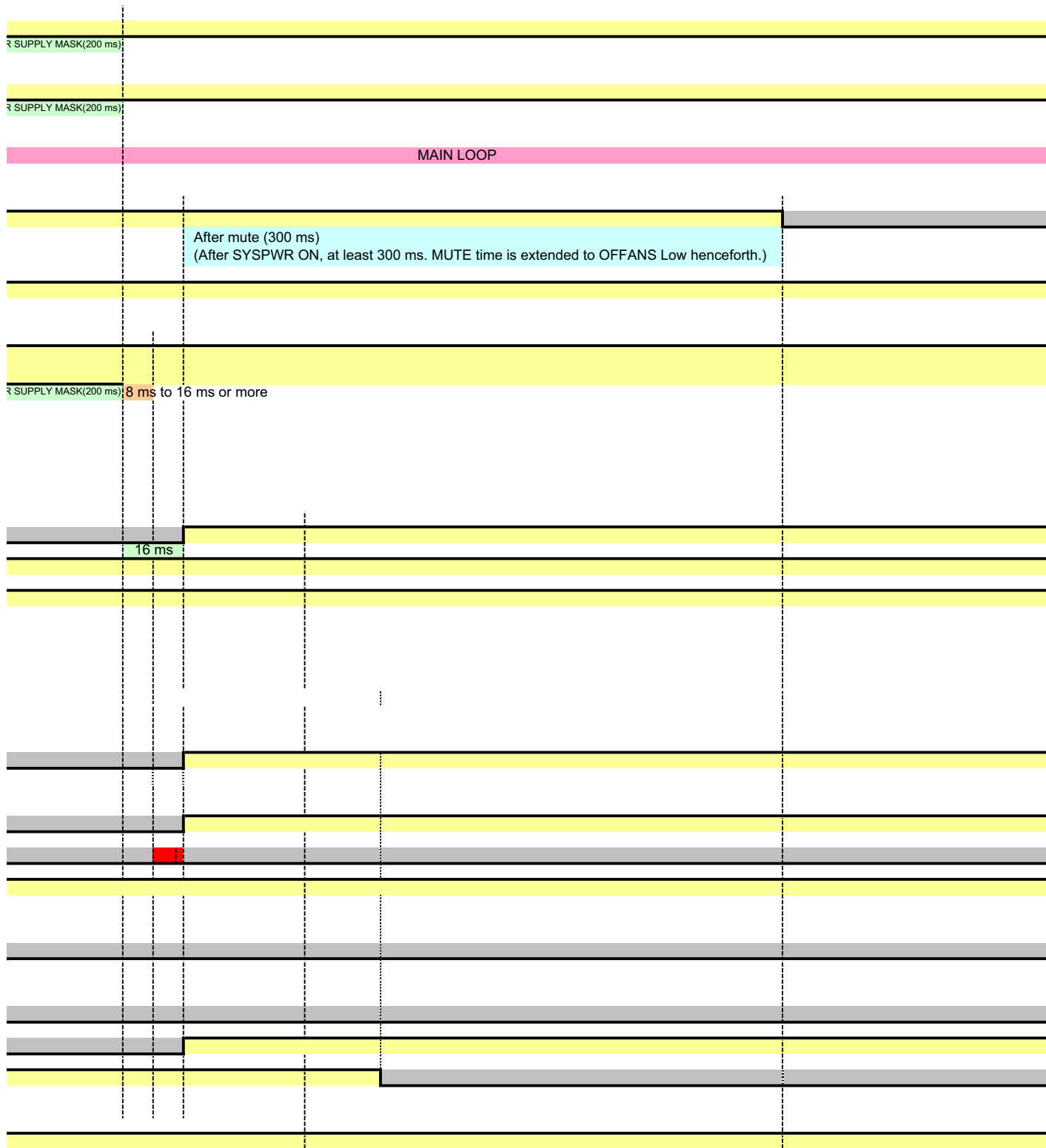
A

Acc on (USUALLY Acc ON)





A



B

C

D

E

F

FANCONT(At the time of high temperature)

## 5.2 ERROR CODE LIST

### ● Error Messages

If a CD is not operative or stopped during operation due to an error, the error mode is turned on and cause(s) of the error is indicated with a corresponding number. This arrangement is intended at reducing nonsense calls from the users and also for facilitating trouble analysis and repair work in servicing.

#### (1) Basic Indication Method

1) When SERRORM is selected for the CSMOD (CD mode area for the system), error codes are written to DMIN (minutes display area) and DSEC (seconds display area). The same data is written to DMIN and DSEC. DTNO remains in blank as before.

#### 2) Head unit display examples

Depending on display capability of LCD used, display will vary as shown below. xx contains the error number.

8-digit display	6-digit display	4-digit display
ERROR-xx	ERR-xx	E-xx

#### (2) Error Code List

Code	Class	Displayed error code	Description of the code and potential cause(s)
10	Electricity	Carriage Home NG SERVO LSI Com- munication Error	CRG can't be moved to inner diameter. CRG can't be moved from inner diameter. -> Failure on home switch or CRG move mechanism. Communication error between microcomputer and SERVO LSI.
11	Electricity	Focus Servo NG	Focusing not available. -> Stains on rear side of disc or excessive vibrations on REWRITABLE.
12	Electricity	Spindle Lock NG Subcode NG	Spindle not locked. Sub-code is strange (not readable). -> Failure on spindle, stains or damages on disc, or excessive vibrations. A disc not containing CD-R data is found. Turned over disc are found, though rarely. CD signal error.
17	Electricity	Setup NG	AGC protection doesn't work. Focus can be easily lost. -> Damages or stains on disc, or excessive vibrations on REWRITABLE.
30	Electricity	Search Time Out	Failed to reach target address. -> CRG tracking error or damages on disc.
44	Electricity	ALL Skip	Skip setting for all track. (CD-R/RW)
50	Mechanism	CD On Mech Error	Mechanical error during CD ON. -> Defective loading motor, mechanical lock and mechanical sensor.
A0	System	Power Supply NG	Power (VD) is ground faulted. -> Failure on SW transistor or power supply (failure on connector).

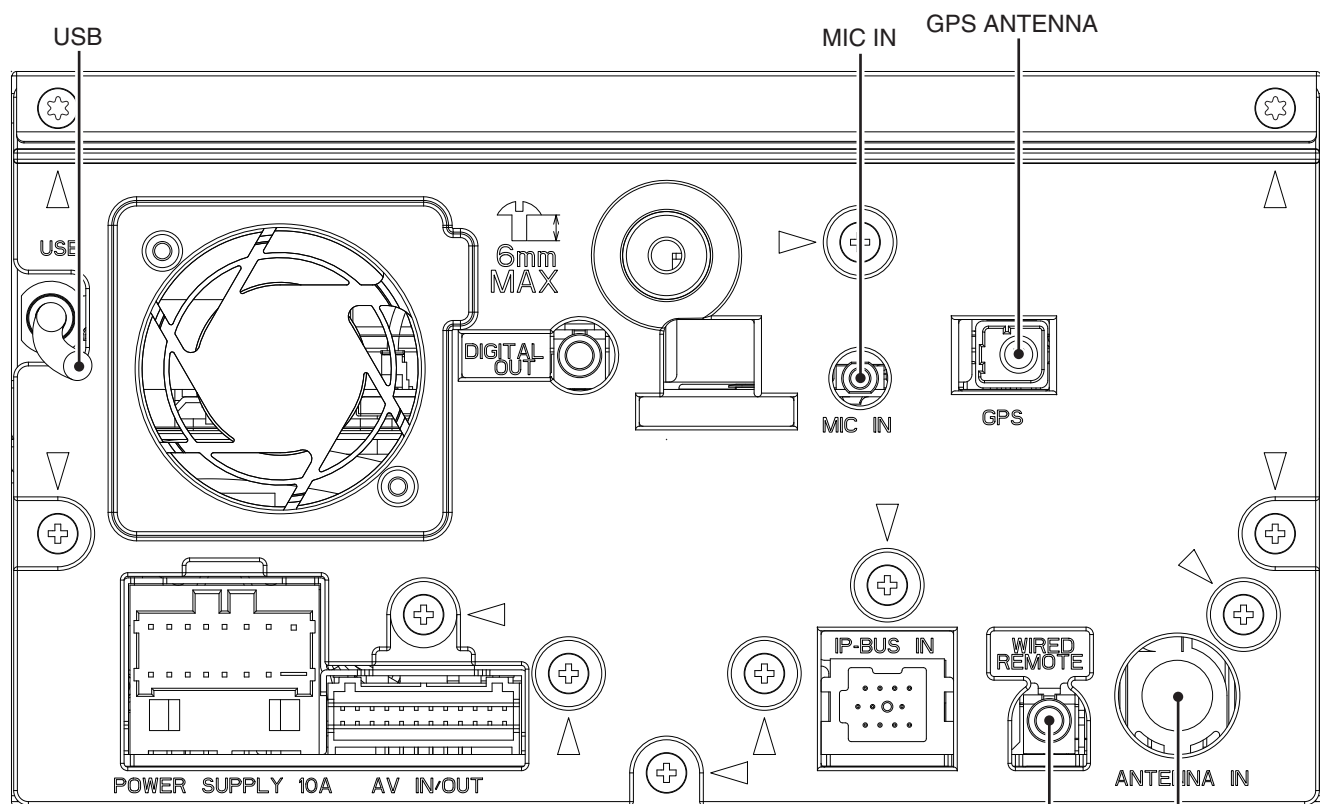
Remarks: Mechanical errors are not displayed (because a CD is turned off in these errors).

Unreadable TOC does not constitute an error. An intended operation continues in this case.

Upper digits of an error code are subdivided as shown below:

1x: Setup relevant errors, 3x: Search relevant errors, Ax: Other errors.

## 5.3 CONNECTOR FUNCTION DESCRIPTION



POWER SUPPLY

1	3	5	7	9	11	13	15
2	4	6	8	10	12	14	16

AV IN/OUT

1	3	5	7	9	11	13	15	17	19	21	23
2	4	6	8	10	12	14	16	18	20	22	24

IP-BUS IN (UC)

8	9	10	11
5	6	7	
1	2	3	4

WIRED REMOTE

FM/AM ANTENNA

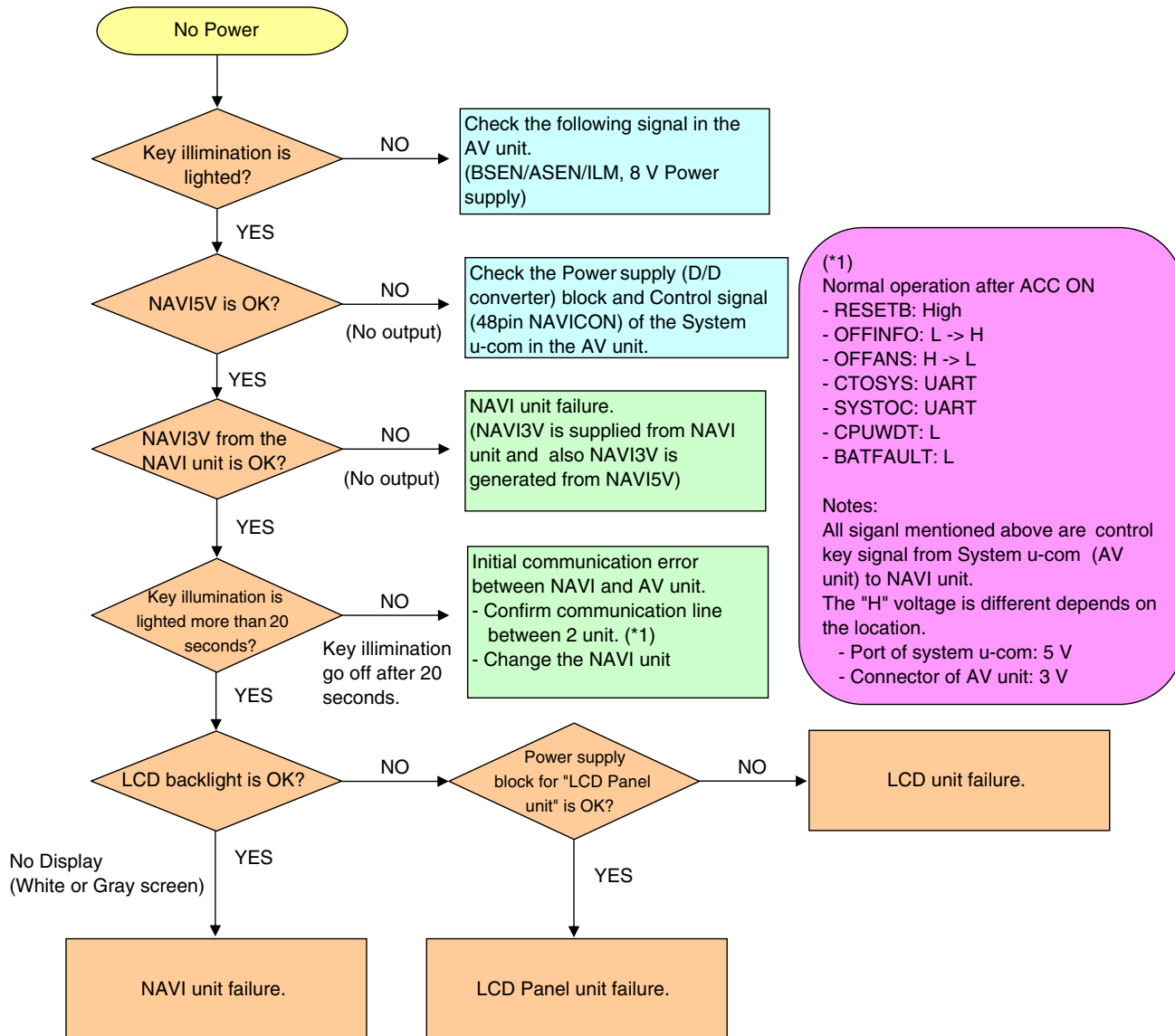
1. FR+
2. RR+
3. FR-
4. RR-
5. FL+
6. RL+
7. FL-
8. RL-
9. PKB
10. PULSE
11. REV
12. ILM
13. AANT
14. ACC
15. GND
16. BUP

1. TELMUTE
2. DTVVGND
3. RR
4. DTVV
5. RL
6. REARGND
7. FR
8. KMODE
9. FL
10. FRONTGND
11. SWR
12. BREM
13. SWL
14. SWGND
15. VTR1R
16. VTR1RGND
17. VTR1L
18. VTR1LGND
19. VTR1V
20. VTR1VGND
21. REARVOUT
22. GNDV
23. BCV
24. BCVGND

1. IPBUS+
2. IPBUSG
3. IPLG
4. NC
5. IPBUS-
6. IPRG
7. IPL+
8. ASENBO
9. IPR+
10. IPR-
11. IPL-

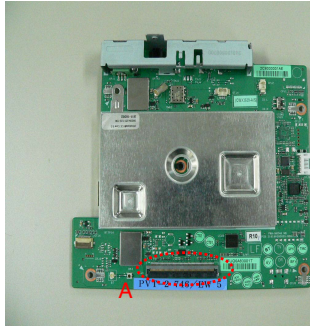
## 5.4 TROUBLESHOOTING

### ● FLOWCHART

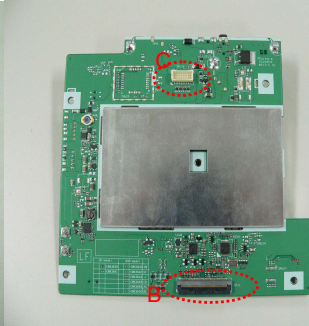


## ● DIAGNOSIS POINT

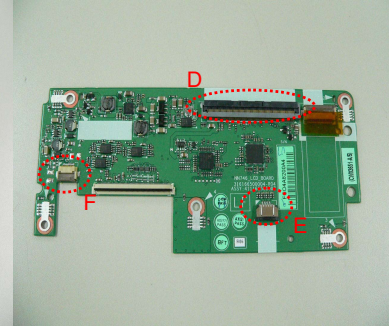
NAVI BD Side A



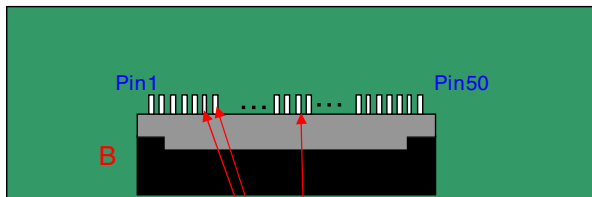
NAVI BD Side B



LCD BD Side A



### Case 1 System can not wake-up.



Pin27: NAVI33V  
Pin5: OFFINFO  
Pin6: OFFANS

Pin13: SYSTOC  
Pin14: CTOSYS

ACC ON ACC OFF

High High

High Low

Low High

(High = 3.3 V)

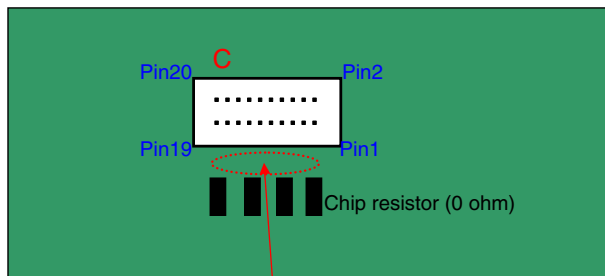
Communication line (Sys u-com to NAVI unit)

Communication line (NAVI unit to Sys u-com)

This power supply is from NAVI BD to AV BD.

This signal is from AV BD(system-ucom) to NAVI BD.

This signal is from NAVI BD to AV BD(system-ucom).



Chip resistor (0 ohm)

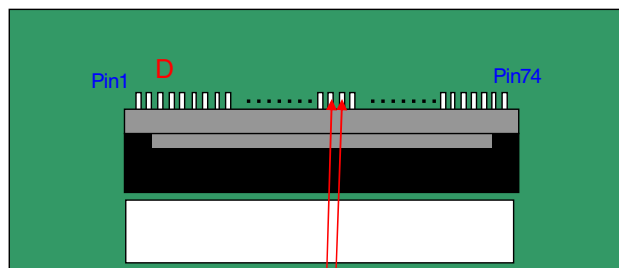
Pin3,5,7,9,11,13,15,17,19  
NAVI 5V 5V 5V

ACC ON ACC OFF

5V 5V 5V

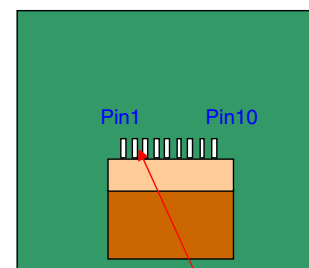
power supply is from AV BD to NAVI BD.

### Case 2 Navi image can not be displayed on LCD.



Pin36: LVDSN  
Pin37: LVDSP

Video signal (LVDS) from NAVI to LCD BD.  
Video signal (LVDS) from NAVI to LCD BD.

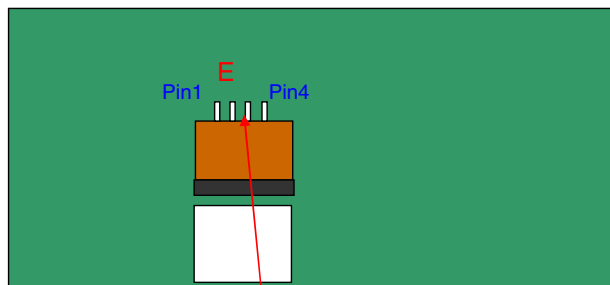


Pin1: TFT\_ANODE  
Pin2: TFT\_ANODE2  
Pin6: TFT\_CATHODE  
Pin7: TFT\_CATHODE

Power supply  
from LCD BD to  
LCD unit

### Case 3 Touch panel operation doesn't work

A

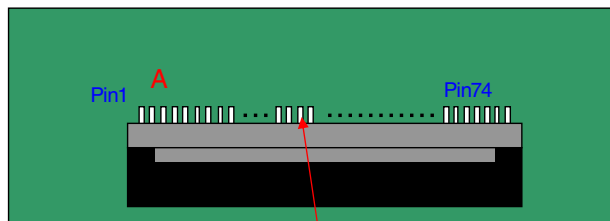


B

Pin1: nYPON  
Pin2: nXPON  
Pin3: YMON  
Pin4: XMON

The signal from touch-panel to LCD BD  
(Waveform pulse can be mintored while operating touch-panel.)

C

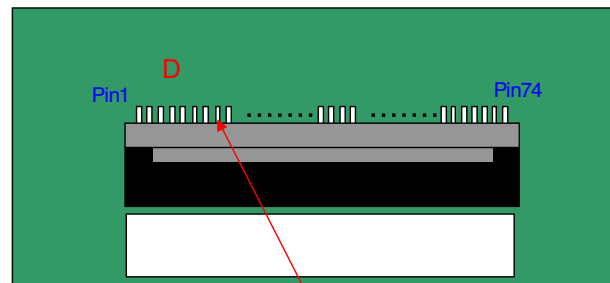


Pin29: nYPON  
Pin30: nXPON  
Pin31: YMON  
Pin32: XMON

The signal from LCD BD to NAVI BD  
(Waveform pulse can be mintored while operating touch-panel.)

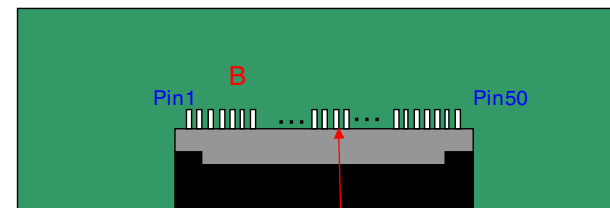
### Case 4 Hard Key doesn't work

D



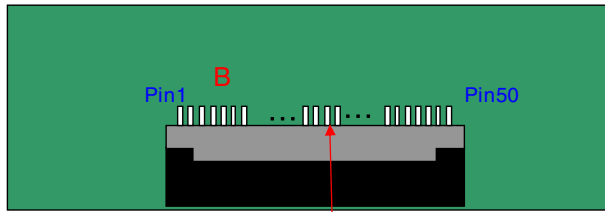
Pin8: KEY0 KEY (Push, Menu, Right) signal from KEY BD to LCD BD (DC Voltage)  
Pin9: KEY1 KEY (MAP, Left, Down ,Up) signal from KEY BD to LCD BD (DC Voltage)  
Pin11: ROT0 KEY (Rotary) signal from KEY BD to LCD BD (Pulse waveform)  
Pin12: ROT1 KEY (Rotary) signal from KEY BD to LCD BD (Pulse waveform)

E



Pin33: ROT0 KEY (Rotary) signal from KEY BD to LCD BD (Pulse waveform)  
Pin34: ROT1 KEY (Rotary) signal from KEY BD to LCD BD (Pulse waveform)

F

**Case 5 Audio (NAVI SOURCE) or Guide voice (BEEP sound) is NG.**

Pin19: GUI\_P      Guidance or BEEP sound  
Pin28: NAVI L    Audio Lch  
Pin30: NAVI R    Audio Rch  
Pin29,31: GND

# 6. SERVICE MODE

## 6.1 TEST MODE

Jig No : GGV1322

### 1. Test mode menu selection method

The main keyboard cannot be used for this operation.  
Double-click the touch panel directly.

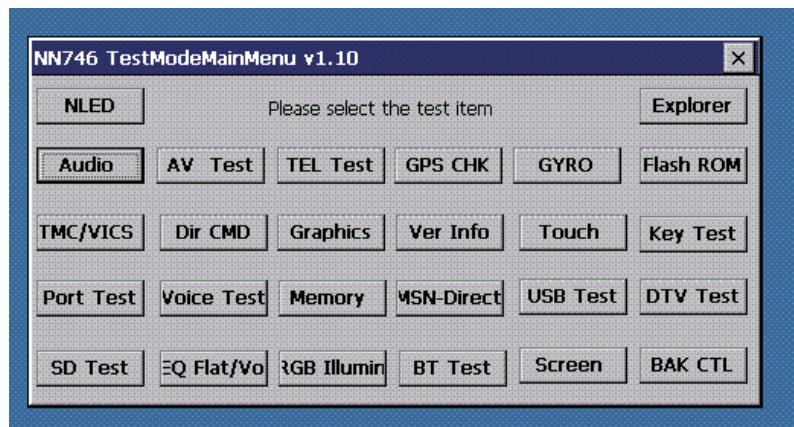
### 2. Test mode activation method

1. Copy a "TestMode" folder under "TestMode" folder on GGV1322 to a SD card.  
Note: "TestMode" folder must be on the SD card root.
2. Download a ID file from the Service Site and copy the file to the "TestMode" folder on the SD card.
3. Insert the SD card into the main unit.
4. Turn ACC ON.
5. The test mode menu is displayed.

<< Enter the test mode in the set procedure. >>

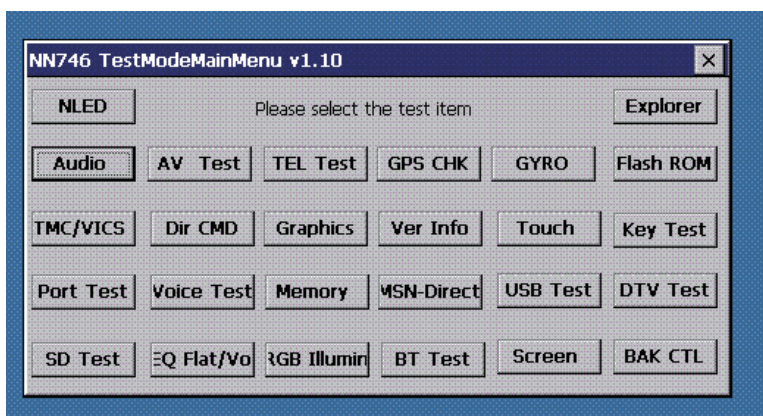
Start screen

When the set procedure is followed (Procedure OK)





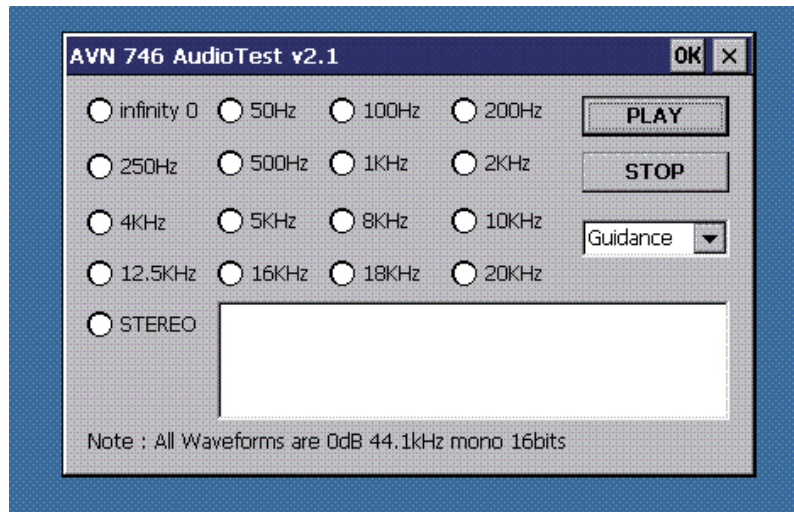
### 3. Test mode menu



No.	Test Item	Test Content
1	Audio	Playback of audio
2	AV Test	Not for service
3	TEL Test	Not for service
4	GPS CHK	GPS receiver test
5	GYRO	Not for this model (F900 series only)
6	Flash ROM	Flash ROM read/write test
7	TMC/VICS	FM multiplex error test
8	Dir CMD	Not for service
9	Graphics	Graphics test
10	Ver Info	Display version information of software, mecha, and microcomputers.
11	Touch	Correction and test of Touch Panel
12	Key Test	Not for service
13	Port Test	Display states such as parking and reverse.
14	Voice Test	Not for service
15	Memory	Not for service
16	MSN-Direct	Not for service
17	USB Test	Not for service
18	DTV Test	Not for service
19	SD Test	SD card test
20	EQ Flat/Vo	Not for service
21	RGB Illumin	Not for service
22	BT Test	Not for service
23	Screen	Not for service
24	BAK CTL	Adjustment of the LCD backlight

## Audio Test Screen

Audio Test Mode



<< Key Operation >>

[Play] ... Play

[Stop] ... Stop

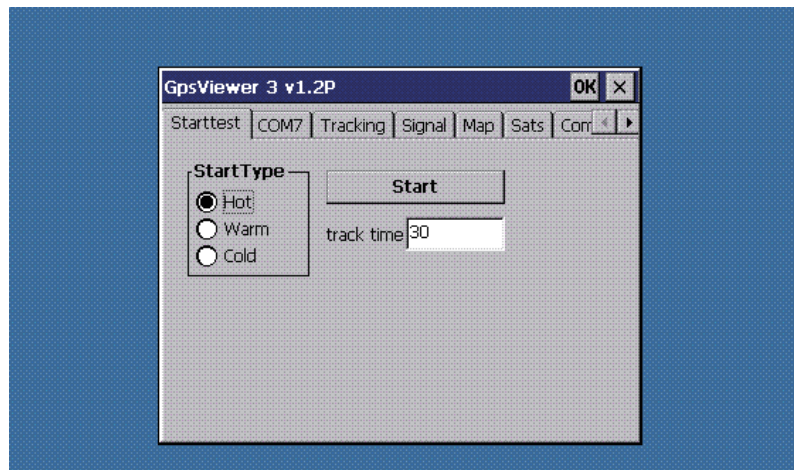
[Guidance] ... Output of guidance

[Stereo] ... Output of stereo

[OK] ... Terminate Audio Test.

## Gps Viewer Execution Screen

Starttest

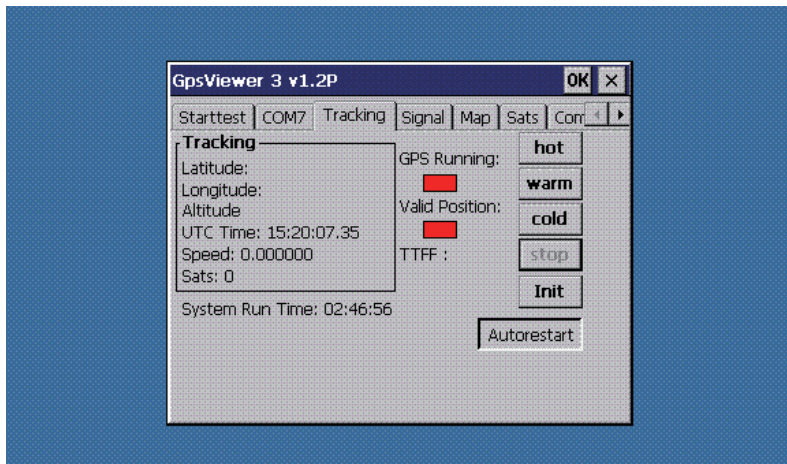


<< Operation method >>

1. Select 'Start Type'. Normally, 'Hot'.

2. Press 'Start' to start the test.

## Tracking



<< Operation method >>

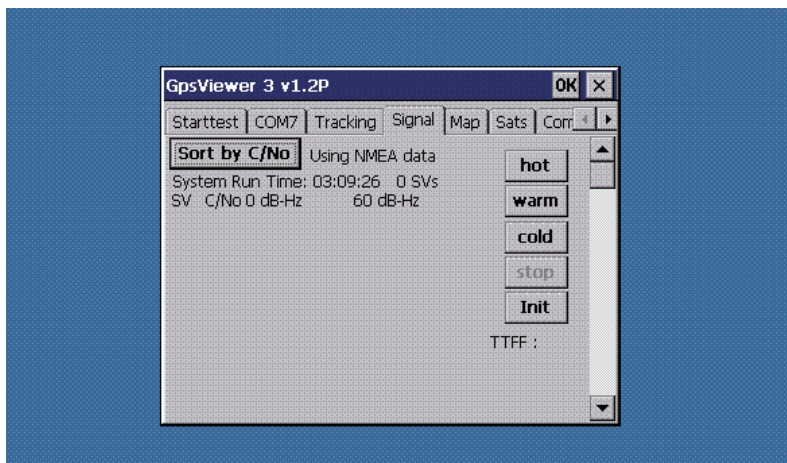
1. When GPS Running is red, press 'hot'.



<< Operation method >>

1. When GPS Running is green, the test is started.
2. When Valid Position is green, the measurement is successfully conducted.

## Signal



<< Operation method >>

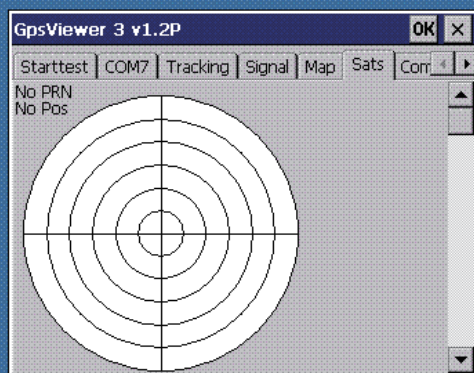
1. The screen will be in this state if the test is not started.
2. To start the test, press 'hot'.



<< Operation method >>

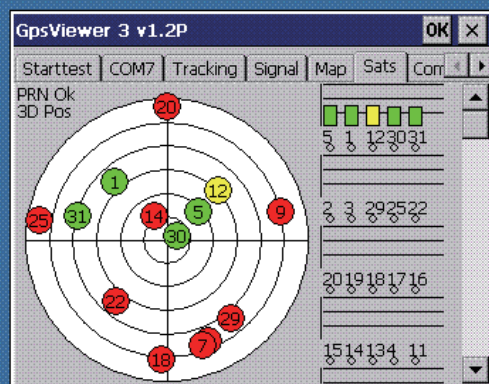
1. The screen will be in this state if the test starts.
2. When the blue color bar appears, GPS signal is locked.

Sats



<< Operation method >>

1. The screen will be in this state if the test is not started.
2. To start the test, refer to 'Start test' tab.

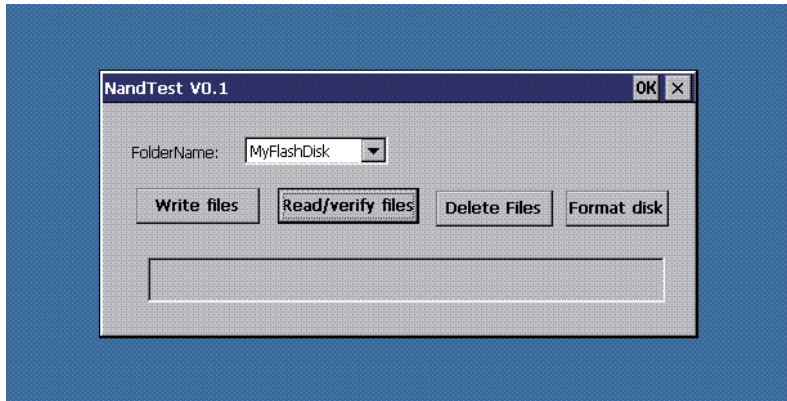


<< Operation method >>

1. When the test starts and a satellite is started to be acquired, the screen will be in this state.
- Red ... Not acquired. Yellow ... Already acquired. Green ... Acquired and data obtained.



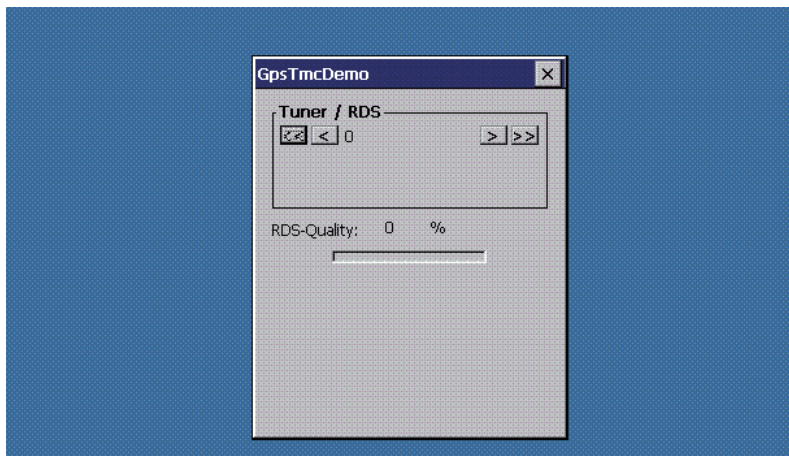
### NAND Flash test mode start screen



Write files	Conduct a write test to NAND Flash disc.
Read/verify files	Conduct a read test to NAND Flash disc. Notes) It will take time by test completion.
Delete Files	Conduct a deletion test to NAND Flash disc.
Format disc	Conduct a formatting test to NAND Flash disc. Notes) Only the test area of the Flash disc will be formatted.

### TMC measurement selection screen

GpsTmcDemo



<< Test Content >>

The TMC error rate can be measured.

The frequency can be changed by tapping '<' or '>'.

The test can be terminated by tapping the left 'x' mark.

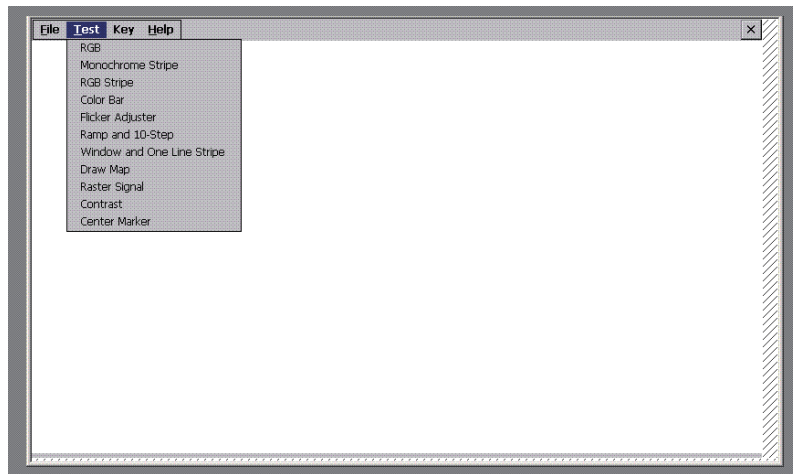
## Graphics Test start screen

Start screen



<< Operation method >>

1. The screen will be in this state after started.
2. Press 'Test' to start the test.



<< Operation method >>

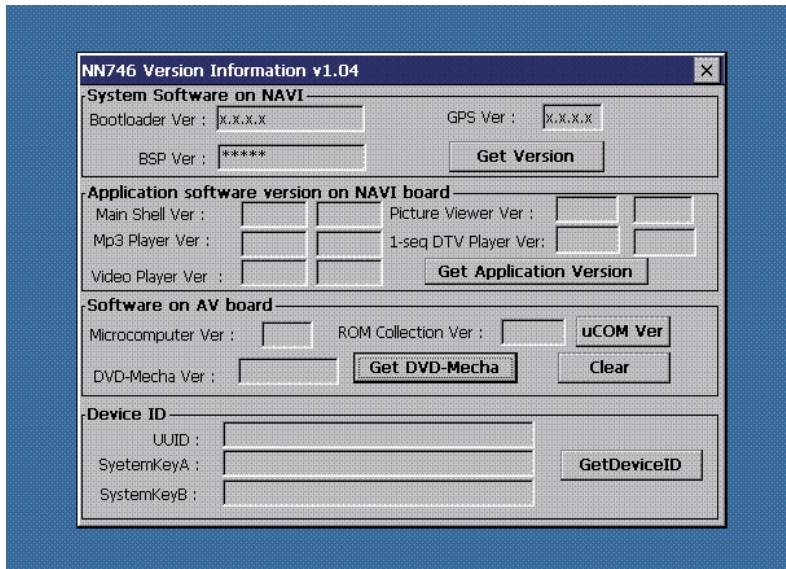
1. The menu appears when 'Test' is pressed. Select the item to test.

<< Operation method >>

1. To terminate the test, press 'File' and then 'Exit'.

## Version Information screen

Start screen



<< Key operation >>

[Get Version] ... Display the version of Bootloader, GPS, and BSP.

[Get Application Version] ... Display the version of each application.

[uCOM Ver] ... Display the microcomputer version and ROM Collection version.

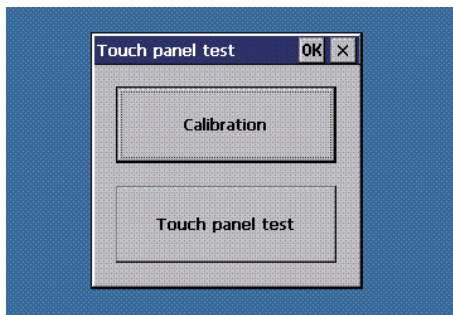
[Get DVD-Mecha] ... Display the DVD and CD mecha version.

[Clear] ... Clear the display of the version of microcomputer, ROM, and mecha.

[GetDeviceID] ... Display the device ID.

## Touch Panel Test screen

Start screen

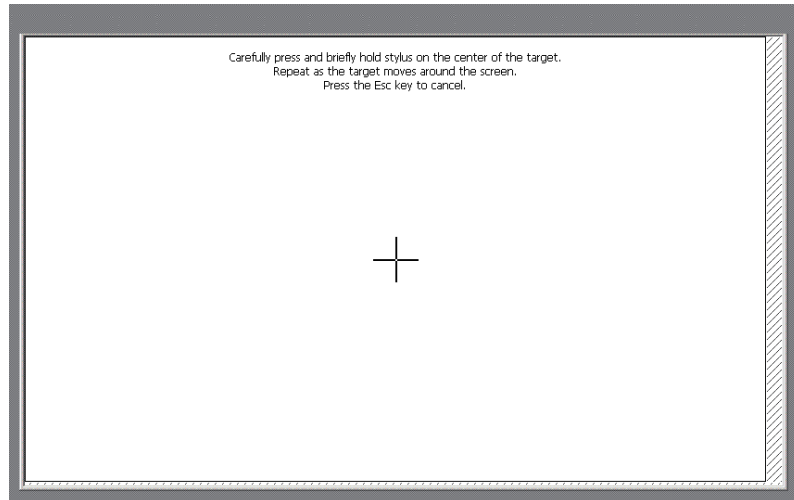


<< Key operation >>

[Calibration] ... Conduct calibration.

[Touch panel test] ... Conduct touch panel test.

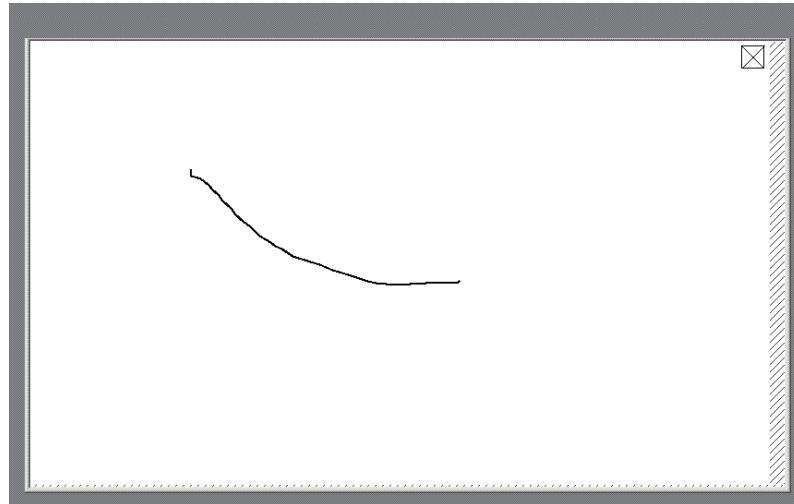
## Calibration



<< Key operation >>

Touch panel calibration can be conducted by tapping five '+' marks.

## Touch Panel Test



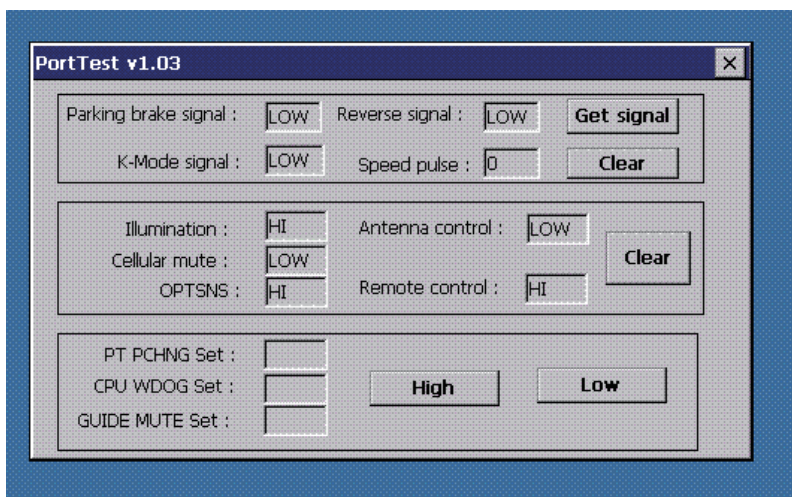
<< Key operation >>

A line appears when a line is drawn by a finger on the touch panel.  
The test can be terminated by pressing the top right 'x' mark.



## Port Test screen

Start screen



<< Key operation >>

[Get signal] ... Display the states of Parking brake, Reverse, K-Mode, and Speed Pulse.

The states of Illumination, Cellular mute, OPTSNS, Antenna control, and Remote control are displayed automatically.

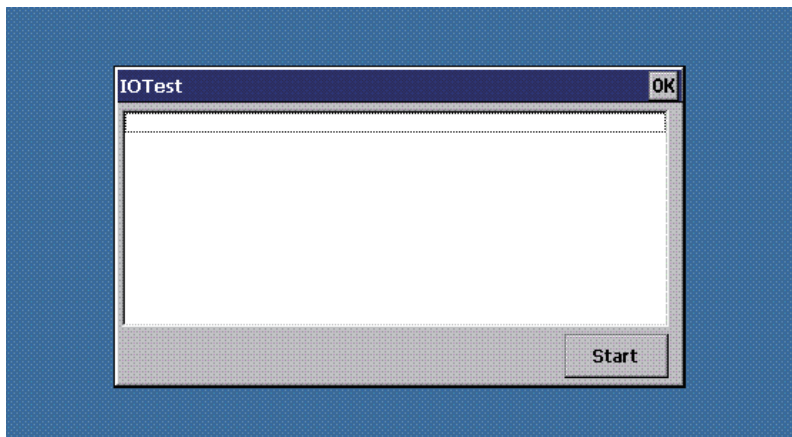
[Clear] ... Clear the display.

[High] ... Not for service

[Low] ... Not for service

## SD Card Test screen

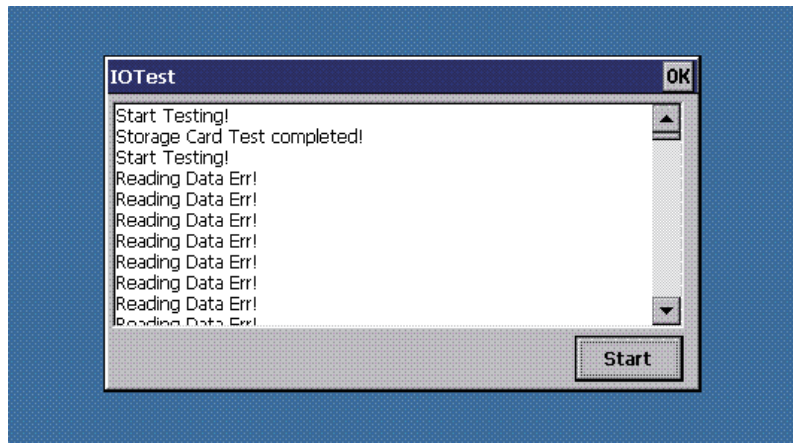
Start screen



<< Key operation >>

[Start] ... Start the test.

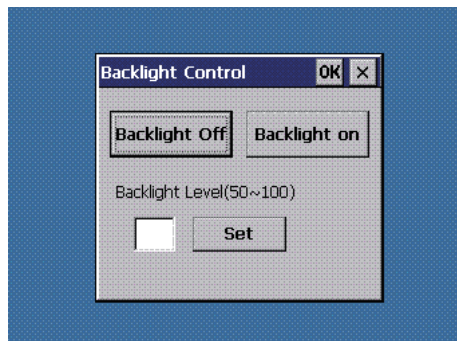
## Error screen



This is the state when an error occurred in the test.

## Backlight Test screen

### Start screen



<< Key operation >>

[Backlight Off] ... The backlight turns off.

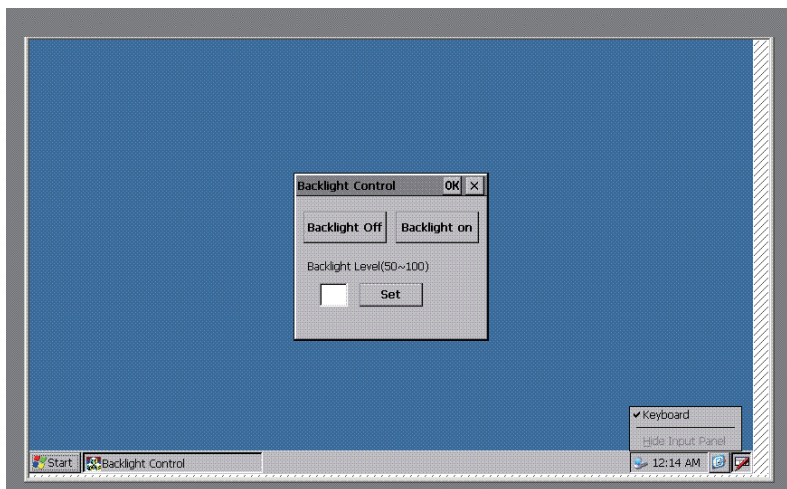
Notes) No operation can be conducted after this operation.

Make a recovery by turning ACC OFF ON.

[Backlight on] ... The backlight turns on.

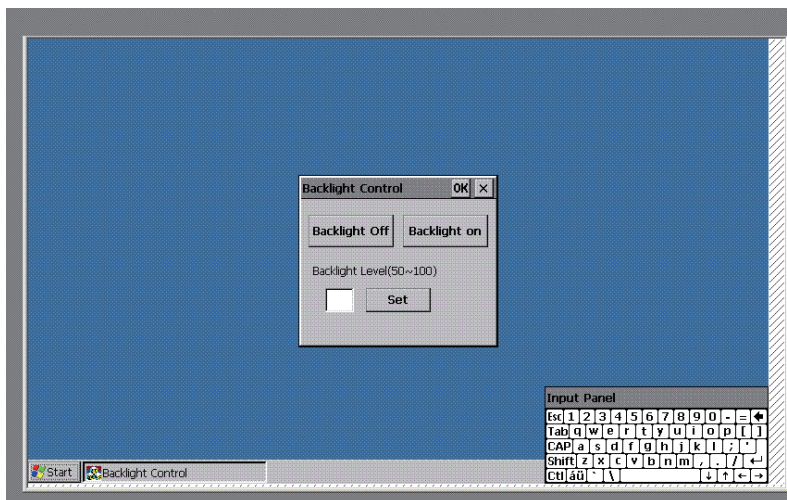
[Set] ... The brightness of the backlight can be changed.

## Backlight Level setting method



### << Key operation >>

1. Tap the edit box at the left of the Set button to make it active.
2. Then, tap the bottom left of the screen, and the screen will be as shown below. Tap 'Keyboard'.



### << Key operation >>

3. When the keyboard appears, tap the edit box again to make it active. Then input by keyboard becomes possible. Enter a desired number and tap 'Set' to change the brightness of the backlight.

## 6.2 CD TEST MODE

### 1) Cautions on adjustments

- In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65 V) instead of the GND.

If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:

- a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.
- b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.
- c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

- Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

- For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

- In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

- The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

- The load and eject operation is not guaranteed with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

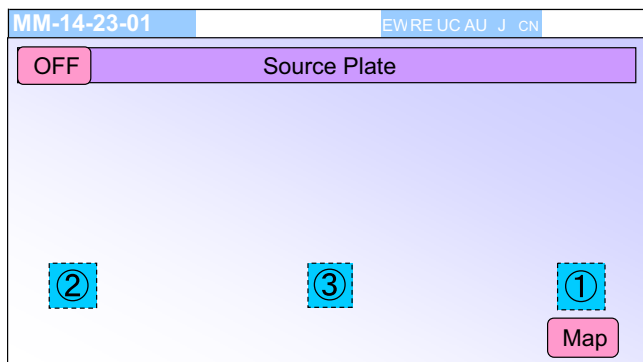
### 2) Test mode

This mode is used to adjust the CD mechanism module.

- To exit from the test mode.  
Turn off the ACC and back up.

#### Notes:

- a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.
- b. If you have pressed the (→) key or (←) key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.
- c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.
- d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.
- e. When the power is turned off and on, the jump mode is reset to the singleTR (91), the RF amp gain is set to 0 dB, and the auto-adjustment values are reset to the default settings.



(1), (2) and (3) are invisible buttons

In this screen, press long the areas (1), (2) and (3) that display the test mode selection screen by implementing the operations below in order.

**Detailed procedure**

Step1 change the screen to source OFF screen

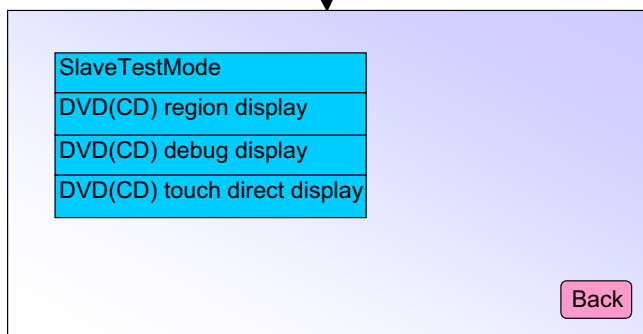
Step2 press the area of (1) long

Step3 press the area of (2) long

Step4 press the area of (3) long

\* When the operation above is normally implemented, BEEP sound 1 is output.

③ If the operation is completed successfully, the screen shifts to test mode screen after (3) is pressed long



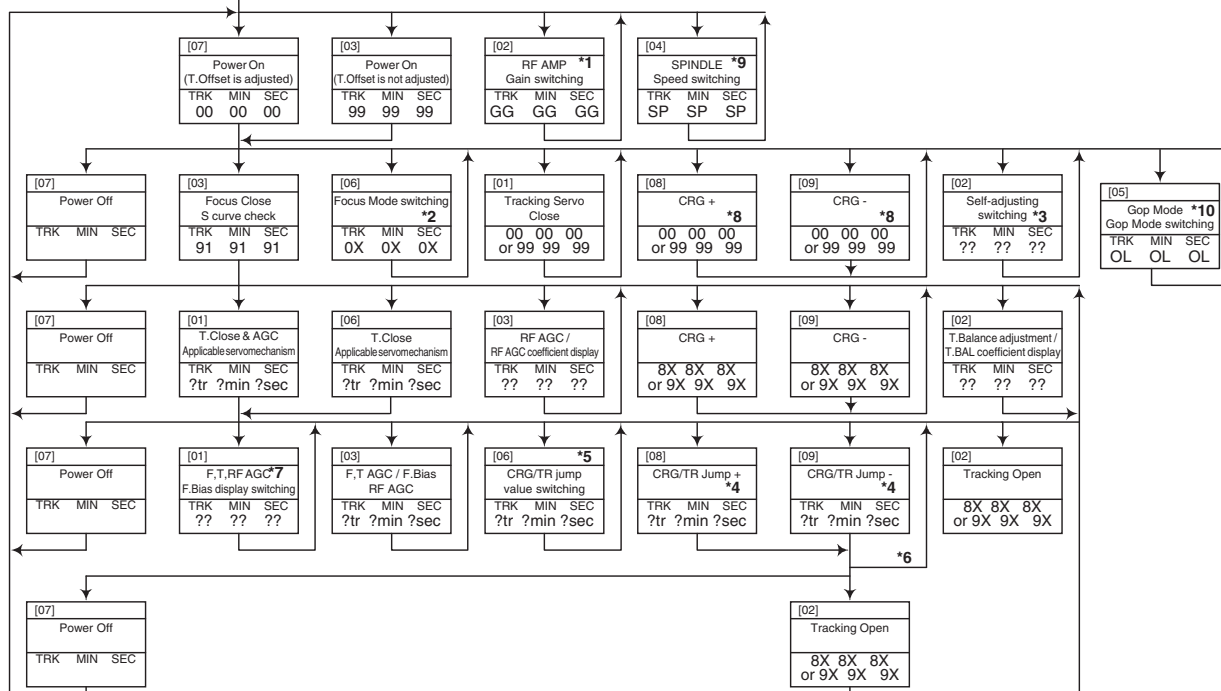
The test mode is released by ACC-OFF operation

Shift to selected test mode.

## Flow Chart

[Key]
Contents
Display

Test Mode In
Source On
TRK MIN SEC



\*1) TYP → + 6 dB → + 12 dB  
TRK MIN SEC → TRK<sub>06</sub>MIN<sub>06</sub>SEC<sub>06</sub> → TRK<sub>12</sub>MIN<sub>12</sub>SEC<sub>12</sub>

\*2) Focus Close → S Curve check setting → F EQ measurement setting  
TRK<sub>00</sub>MIN<sub>00</sub>SEC<sub>00</sub> → TRK<sub>01</sub>MIN<sub>01</sub>SEC<sub>01</sub> → TRK<sub>02</sub>MIN<sub>02</sub>SEC<sub>02</sub>  
(TRK<sub>99</sub>MIN<sub>99</sub>SEC<sub>99</sub>)

\*3) F.Offset Display → RF.Offset → T.Offset Display → Switch to the order of the original display

\*4) 1TR/4TR/10TR/32TR/100TR

\*5) Single → 4TR → 10TR → 32TR → 100TR → CRG Move  
9x(8x):91(81) 92(82) 93(83) 94(84) 95(85) 96(86)

\*6) Only at the time of CRG move, 100TR jump

\*7) TRK/MIN/SEC → F.AGC → T.AGC Gain → F.Bias → RF AGC

\*8) CRG motor voltage = 2 [V]

\*9) TYP (1X) → 2X → 1X  
TRK MIN SEC → TRK<sub>22</sub>MIN<sub>22</sub>SEC<sub>22</sub> → TRK<sub>11</sub>MIN<sub>11</sub>SEC<sub>11</sub>

\*10) OFF(TYP) → FORCUS → TRACKING  
TRK MIN SEC → TRK<sub>70</sub>MIN<sub>70</sub>SEC<sub>70</sub> → TRK<sub>71</sub>MIN<sub>71</sub>SEC<sub>71</sub>

• As for the double speed (2x), audio output cannot be supported

\*) • After the [Eject] key is pressed keys other than the [Eject] key should not be pressed, until disc ejection is complete.

• When the key [2] or [3] is pressed during the Focus Search, the power supply should be immediately turned off (otherwise the lens sticks to Wall, causing the actuator to be damaged).

• In the case of TR jump other than to 100TR, the function shall continue to be processed even if the TR jump key is released. As for the CRG Move and 100TR Jump, the mechanism shall be set to the Tracking Close mode when the key is released.

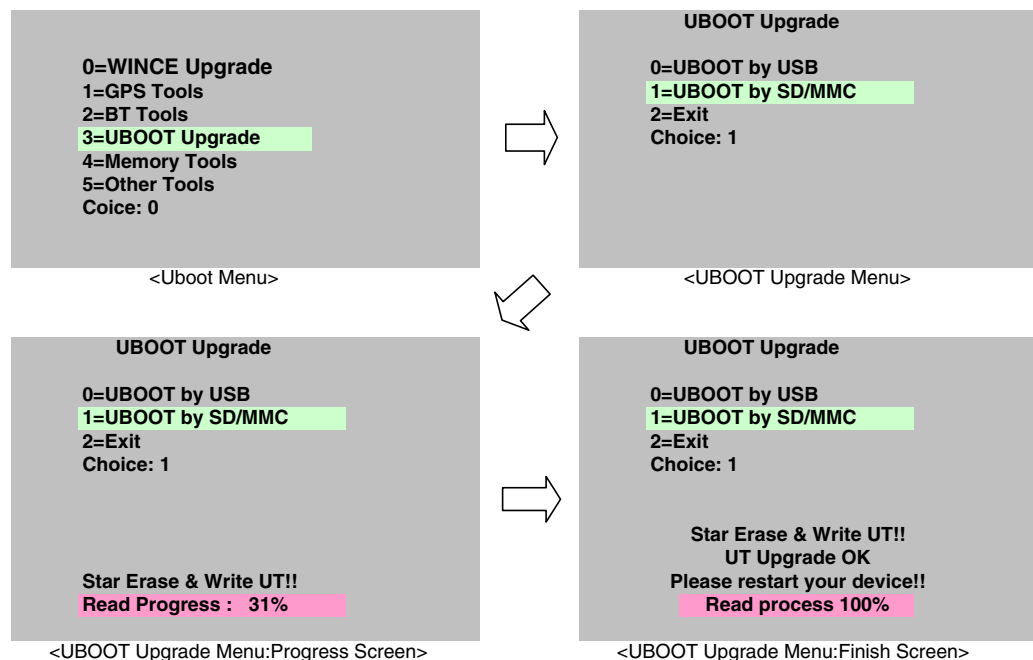
• When the power is turned on/off the jump mode is reset to the Single TR (91) while the gain of the RFAMP is reset to 0 dB. At the same time all the self-adjusting values shall return to the default setting.

[Key]	Operation
[07]	Power On/Off
[08]	CRG + / TR Jump + (Direction of the external surface)
[09]	CRG - / TR Jump - (Direction of the internal surface)
[01]	T. CLS & AGC & Applicable servomechanism / AGC, AGC display setting
[02]	RF Gain switching / Offset adjustment display / T.Balance adjustment / T. Open
[03]	F. Close, S Curve / Rough Servo and RF AGC / F, T, RF AGC
[04]	SPDL 1X/2X switching As for the double speed(2x), audio output <u>cannot</u> be supported.
[5]	Error Rate measurement ON : ERR 30Counts Start BER display data[%]
[6]	F. Mode switching / Tracking Close / CRG•TR Jump Switching

## 6.3 uBOOT MENU

### UBOOT Upgrade

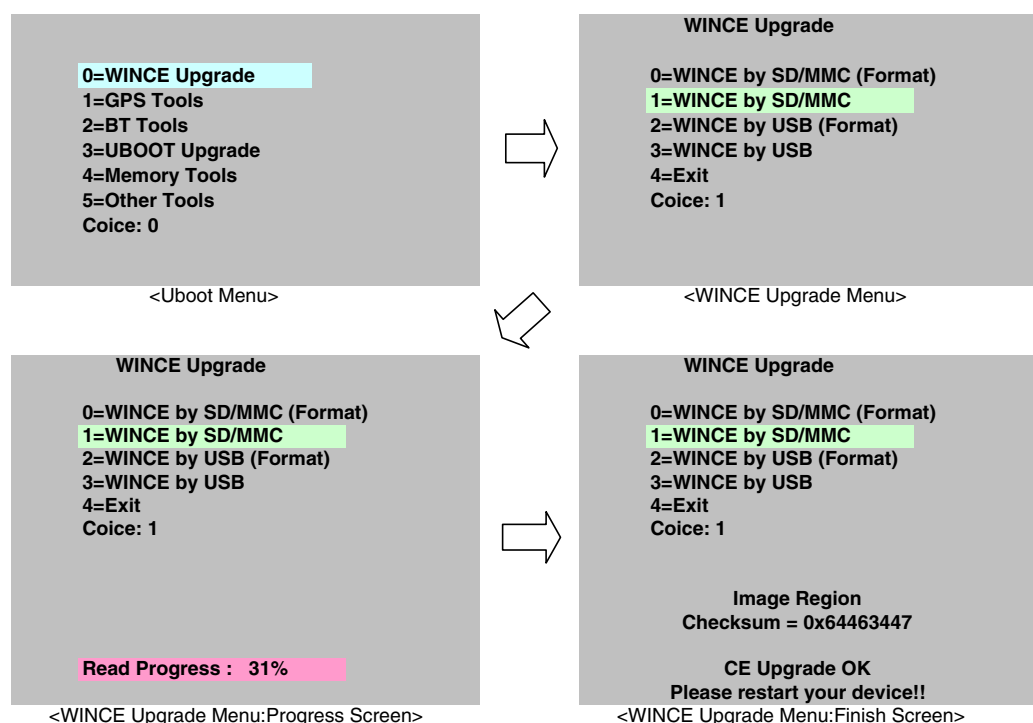
1. Copy the Uboot files named as "uboot.bin" and "uboot.cks" to the SD/MMC card
2. Inset SD/MMC card to the Main Unit at first, then enter the Uboot interface.
3. Select ""3=UBOOT Upgrade" item in Uboot menu, then select ""1=UBOOT by SD/MMC" item in "UBOOT Upgrade" menu and execute.



4. After the menu of "UBOOT Upgrade" show "UT Upgrade OK", restart the device.

### WINCE Image Upgrade

1. Copy the image files named as "winceimg.bin" and "winceimg.cks" to the SD/MMC card.
2. Inset SD/MMC card to the Main Unit at first, then enter the Uboot interface.
3. Select "0=WINCE Upgrade" item in Uboot menu, then select "1=WINCE bySD/MMC" item in "WINCE Upgrade" menu and execute.



4. After the menu of "WINCE Upgrade" show "CE Upgrade OK", restart the device.



## 6.4 USING THE TEST DISC

Jig No : GGV1322

### Test Disc 1 Start Screen Specification

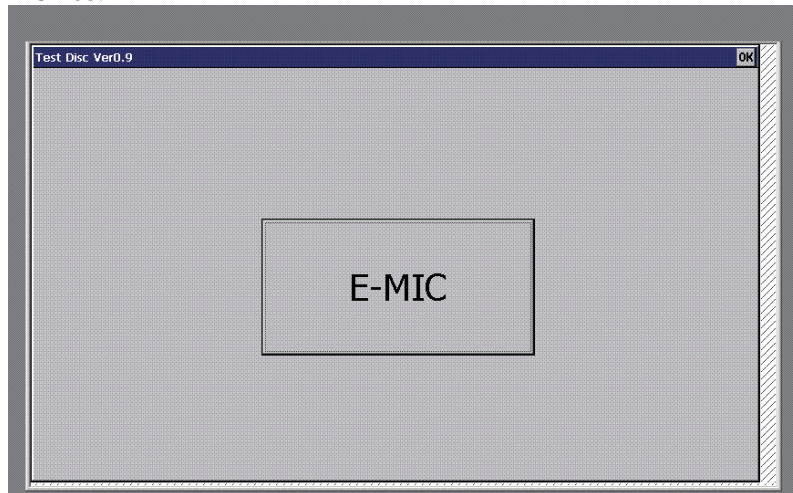
#### Test Disc 1 Start

1. Copy all files under “Test Disc1” folder on GGV1322 to a SD card.
2. Download a ID file from the Service Site and copy the file to the SD card.
3. Insert the Test Disc in the SD card and turn ACC OFF ON. Then, the test disc starts.

The test can be terminated by turning ACC OFF. After turning ACC OFF, remove the SD card.

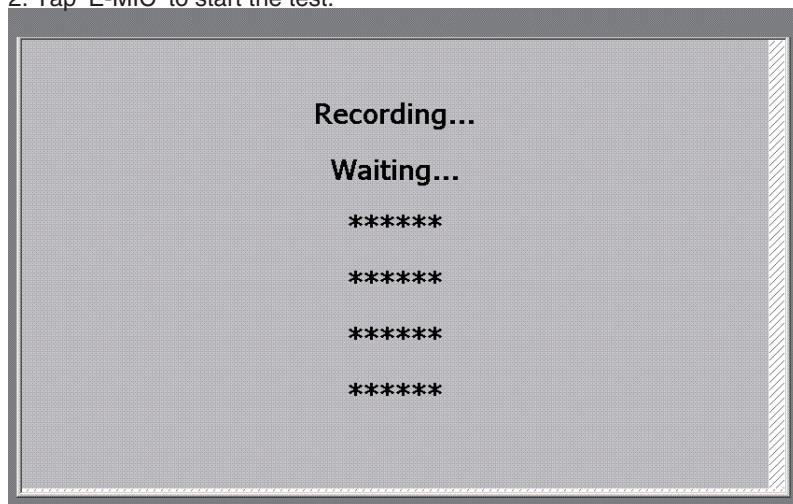
#### Test Disc 1 Start Screen

MIC Test



<< Operation method >>

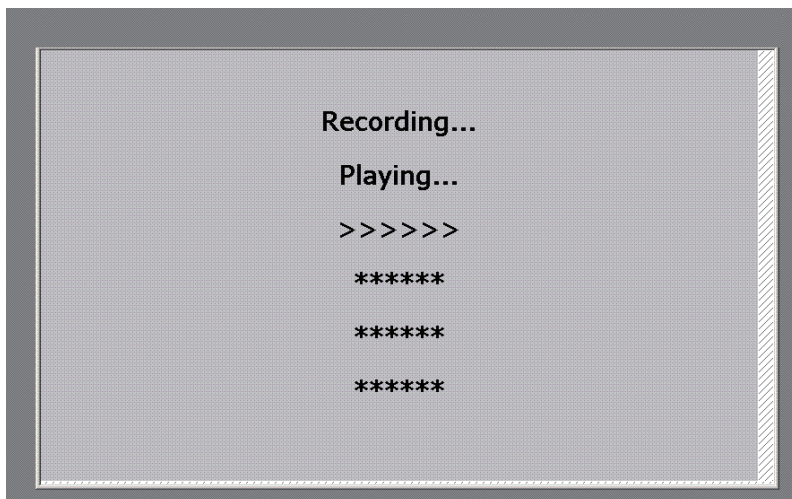
1. This screen appears when the Test Disc is activated.
2. Tap 'E-MIC' to start the test.



<< Operation method >>

1. This screen appears when the test is started.
2. Put a sound into the microphone while this screen is shown. The sound is recorded.





A

<< Operation method >>

1. When this screen appears, the recorded sound is played 'loudly'.

Notes) The sound volume cannot be adjusted.



C

<< Operation method >>

1. When this screen appears, the recorded sound is played 'quietly'.

Notes) The sound volume cannot be adjusted.



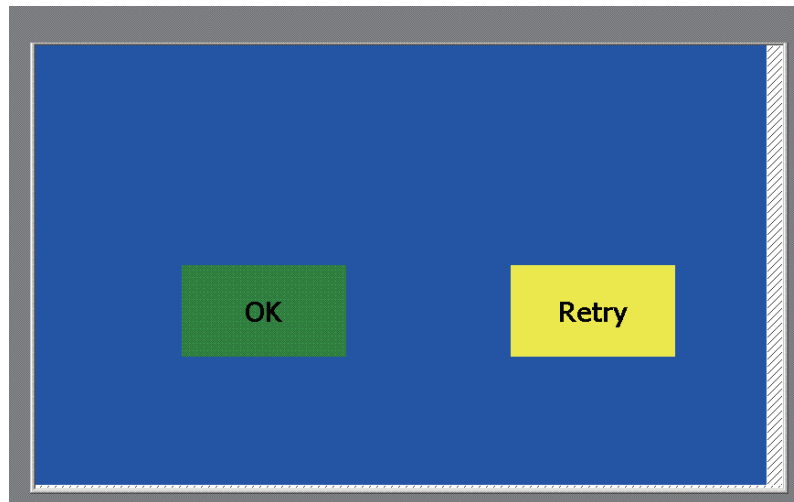
E

<< Operation method >>

1. When this screen appears, the recorded sound is muted.

Notes) The sound volume cannot be adjusted.

F



<< Operation method >>

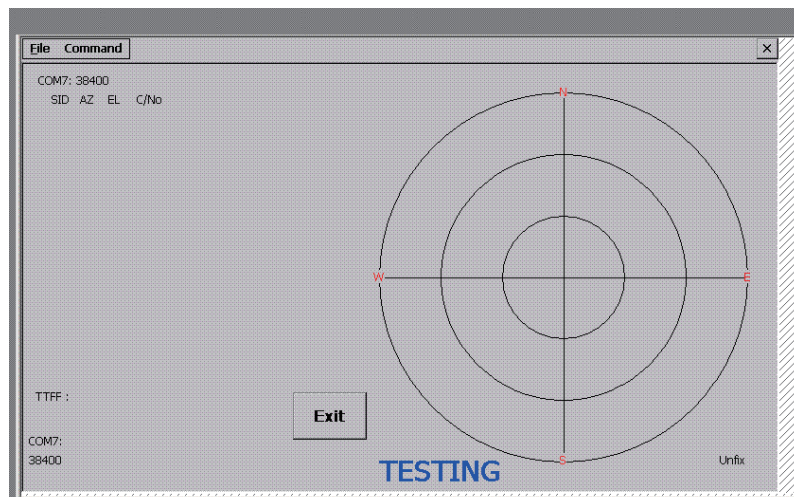
1. When the test finishes, this screen appears.
2. To proceed to the next test, tap 'OK'. To conduct MIC Test again, tap 'Retry'.

#### GPS Test



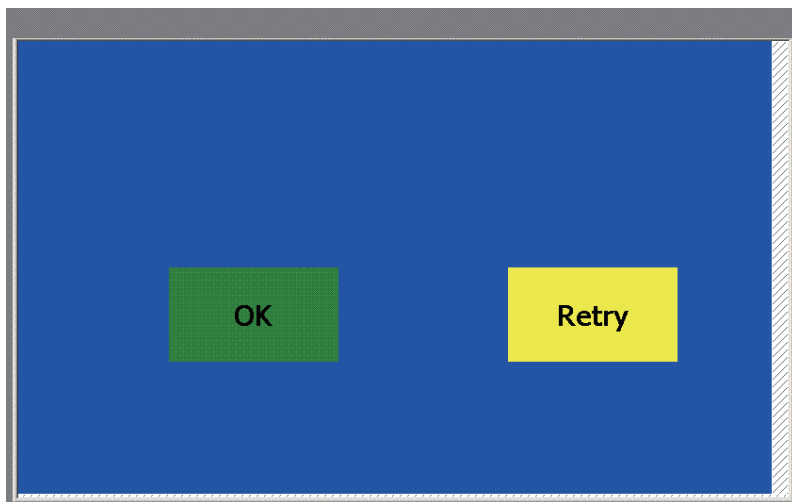
<< Operation method>>

1. This screen appears when the Test Disc is activated.
- If you tap "GPS\_TTFF", the test is started.



<< Operation method >>

1. When the test is started, this screen is displayed.
- When you terminate the test in the way, tap the "Exit".



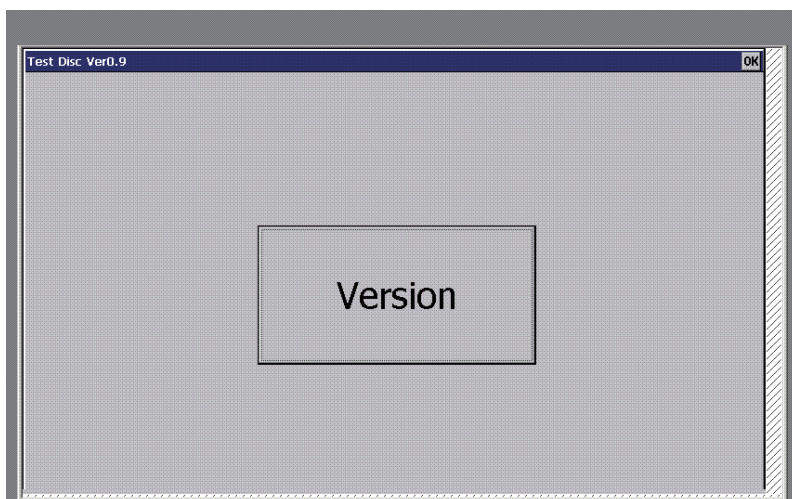
<< Operation method >>

When the positioning is terminated within one minute, the test is completed successfully, and this screen is displayed.

If you implement the test again, tap the "Retry".

If you go to next step, tap "OK".

Version Check



<< Operation method >>

1. This screen appears when the Test Disc is activated.

2. When 'Version' is tapped, the test starts.

If the "Reality" corresponds to "Plan", the result becomes "OK".

A

Comparison Result		
	Reality	Plan
*Map DB		
Area	UC	*
Version	20071226	*
*Application	0.002900	*
*CEImage	R06.2.1210.0109	*
*UBOOT	R13.1.1210.0104	*
*FlashMemory	2G	*
*u-COM		
Version	07.01	*
ResionCode	Sys1	*
*DVD/CD		
Version	02.01.04.00	*
ResionCode	Mecha1	*
*CCID		
Model	4154	4154
Year	4845	4845
*BT-Ver	HW100-SW290	*

B

<< Operation method >>

If the test result is "OK", the blue screen is displayed.

"Reality" is each version on actual machine and the "Plan" is the version information described in "Information.txt" of SD card.

C

Comparison Result		
	Reality	Plan
*Map DB		
Area	UC	EW
Version	20071226	*
*Application	0.002900	*
*CEImage	R06.2.1210.0109	*
*UBOOT	R13.1.1210.0104	*
*FlashMemory	2G	*
*u-COM		
Version	07.01	*
ResionCode	Sys1	*
*DVD/CD		
Version	02.01.04.00	*
ResionCode	Mecha1	*
*CCID		
Model	4154	4154
Year	4845	4845
*BT-Ver	HW100-SW290	*

D

<< Operation method >>

If the test result is "NG", the red screen is displayed.

## Jig No : GGV1322

### Test Disc 2 Start Screen Specification

#### Test Disc 2 Start

1. Copy all files under "Test Disc 2" folder on GGV1322 to a SD card.
2. Download a ID file from the Service Site and copy the file to the SD card.
3. Insert the SD card into the Main Unit and turn ACC OFF ON. Then, the test disc starts.

The test can be terminated by turning ACC OFF. After turning ACC OFF, remove the SD card.

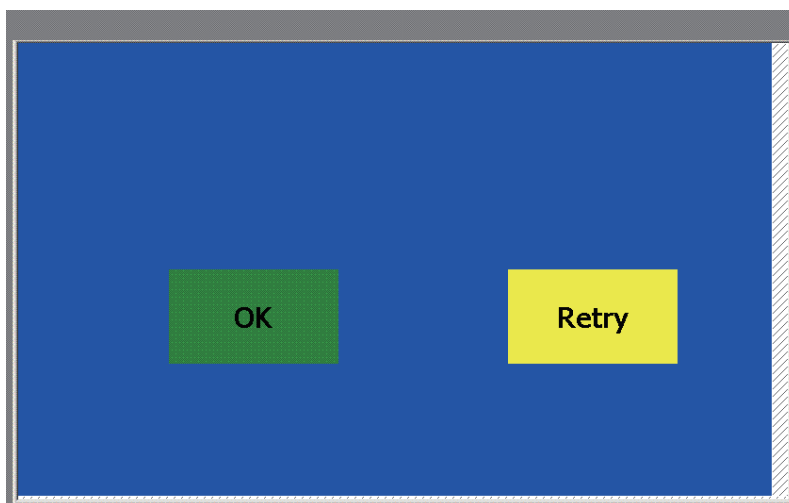
#### Test Disc 2 Start Screen

The user data is deleted



<< Operation method >>

1. This screen appears when the Test Disc is activated.
2. If you tap the "Restore", the user data is deleted.



<< Operation method >>

If the deletion is terminated, this screen is displayed.

Notes:) "Splash screen setting" is not back to default after performing this function.  
Please set the "Splash screen setting", before performing this function.

1 2 3 4

# 7. DISASSEMBLY

NOTE) While the photograph shown is slightly different from this model in shape, the disassembly procedure is the same.

● Removing the Case (Fig.1)

- 1 Remove the two screws and then remove the Case.

Note)  
To remove the screws, use jig No. GGK1068.

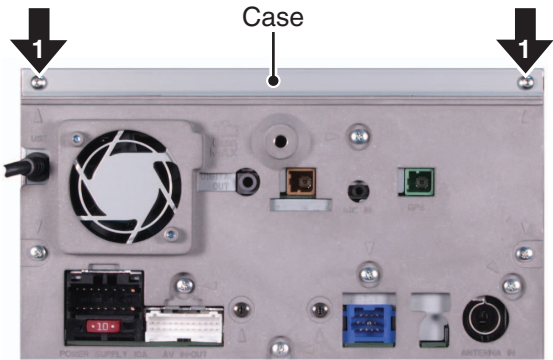
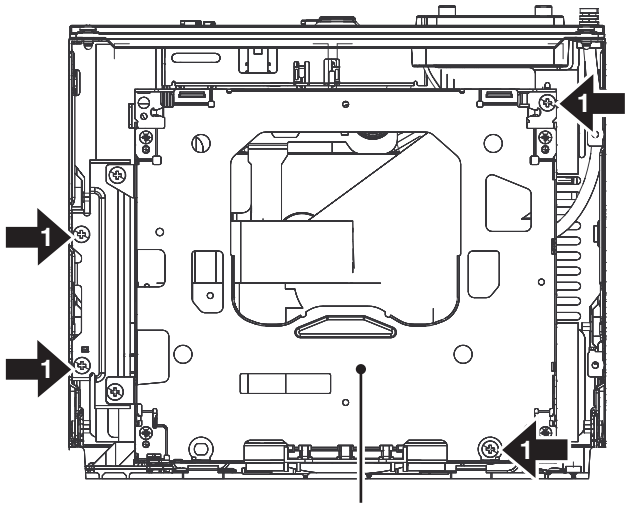


Fig.1

● Removing the CD Mechanism Module (Fig.2)

- 1 Remove the four screws.

Disconnect the connector on the back and then remove the CD Mechanism Module.



CD Mechanism Module

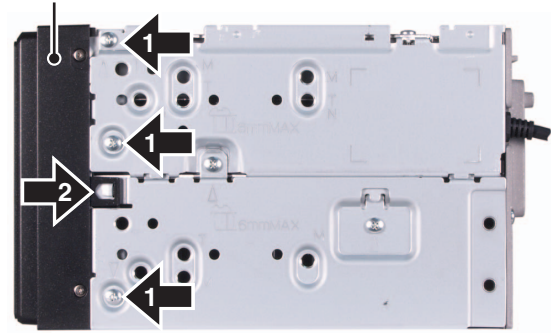
Fig.2



### ● Removing the Monitor Assy (Fig.3)

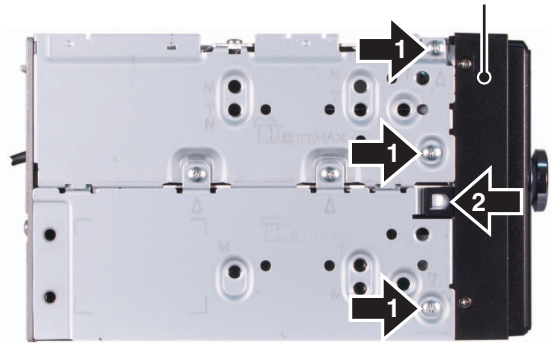
- ➡ **1** Remove the six screws.
- ➡ **2** Release the two latches.
- ➡ **3** Disconnect the three connectors and then remove the Monitor Assy.

Monitor Assy

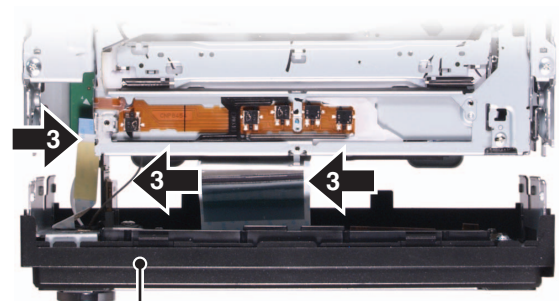


(Right side)

Monitor Assy



(Left side)



(Top side)

Monitor Assy

Fig.3

### ● Removing the Navi Unit (Fig.4)

- ➡ **1** Remove the five screws.
- ➡ **2** Disconnect the four connectors and then remove the Navi Unit.

Navi Unit

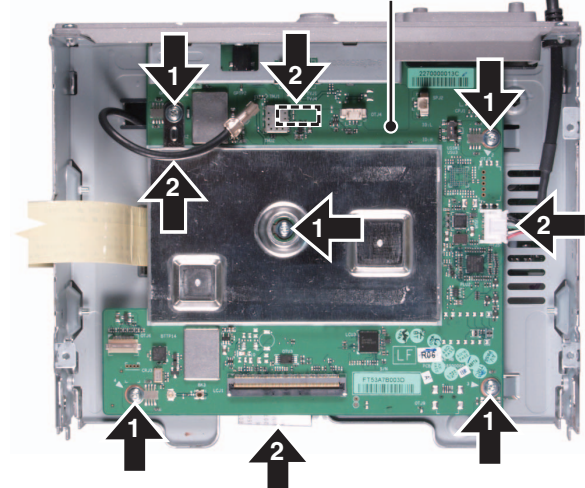


Fig.4

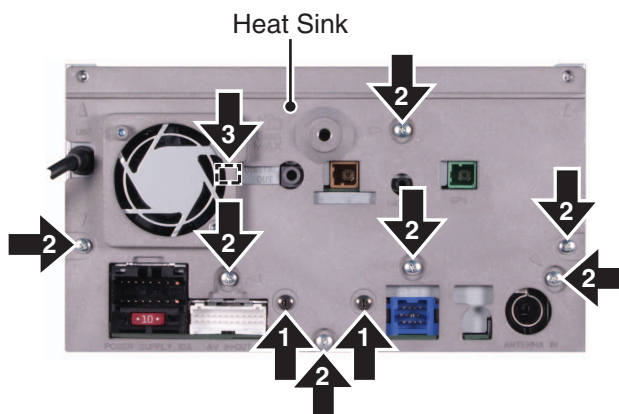
## ● Removing the AV Unit (Fig.5)

Remove the FFC(CDE8550).

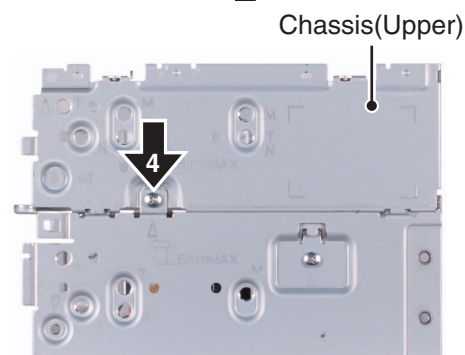
**1** Remove the two screws.

**2** Remove the seven screws.

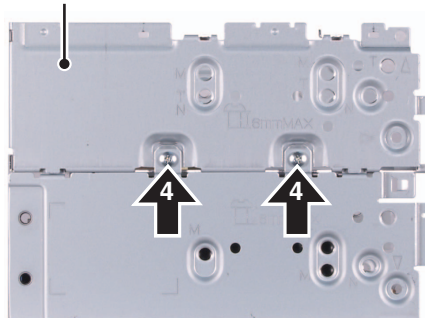
**3** Disconnect the connector and then remove the Heat Sink.



**4** Remove the three screws and then remove the Chassis(Upper).



(Right side)  
Chassis(upper)



(Left side)

Remove the FFC(CDE8552).

Remove the cord assy(CDE8393).

Remove the cord assy(CDH1381).

**5** Remove the screw.

**6** Remove the six screws and then remove the AV Unit.

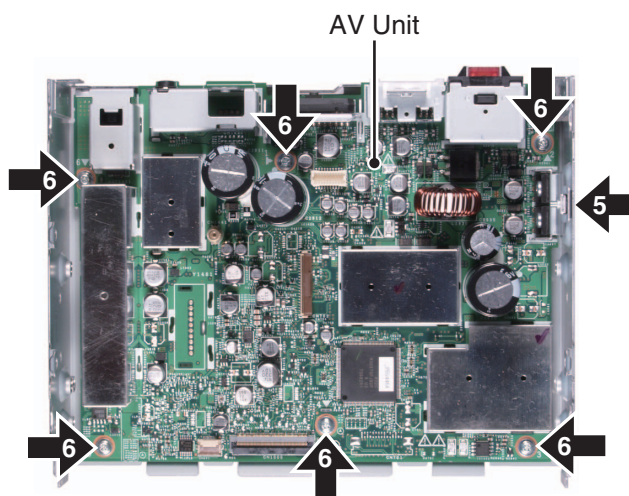


Fig.5



### ● Removing the Panel Unit (Fig.6)

**1** Remove the screw and connector and then remove the SD Unit.

**2** Disconnect the four connectors.

**3** Remove the five screws and then remove the Panel Unit.

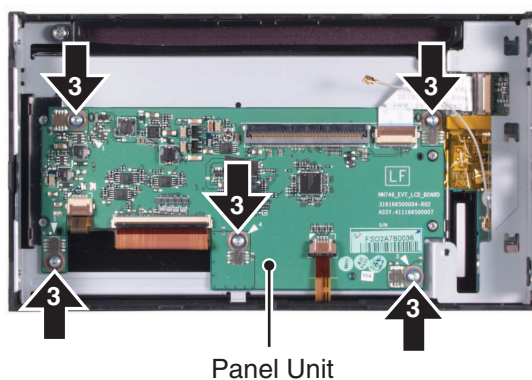
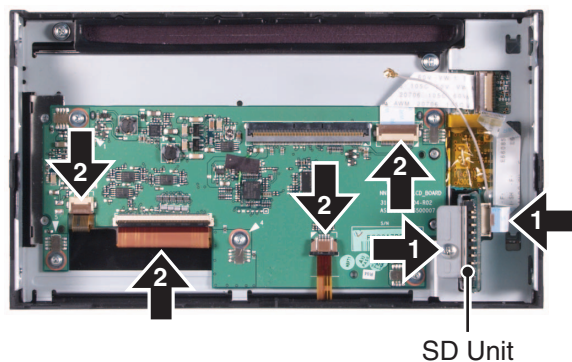


Fig.6

### ● Removing the Keyboard Unit (Fig.7)

**1** Remove the four screws.

**2** Release the five latches and then remove the LCD Module Assy.

**3** Remove the four screws and then remove the Keyboard Unit.

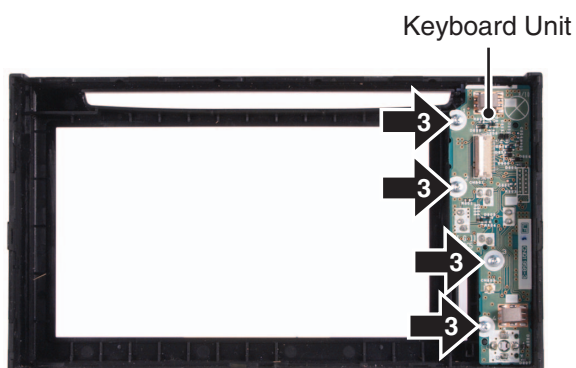
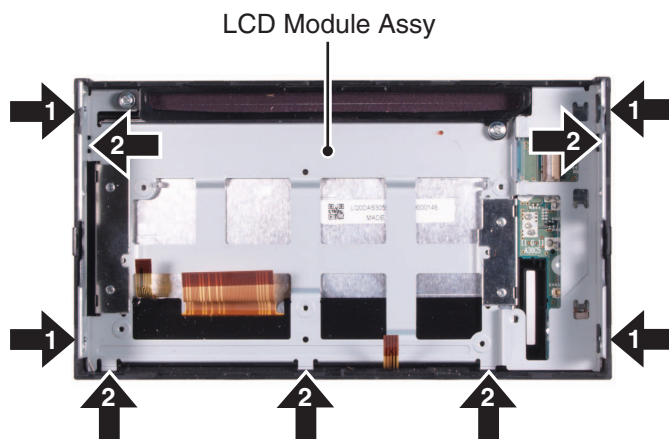
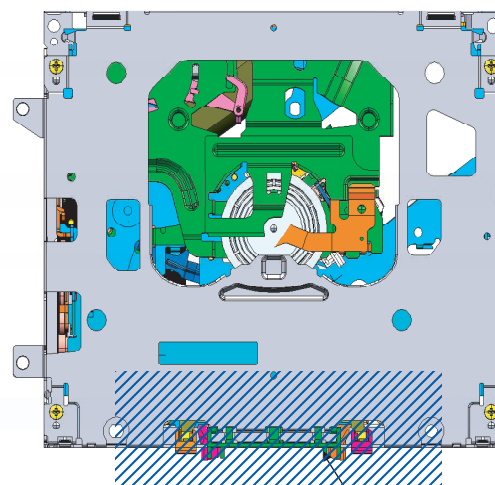


Fig.7

### ● How to hold the Mechanism Unit

1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.

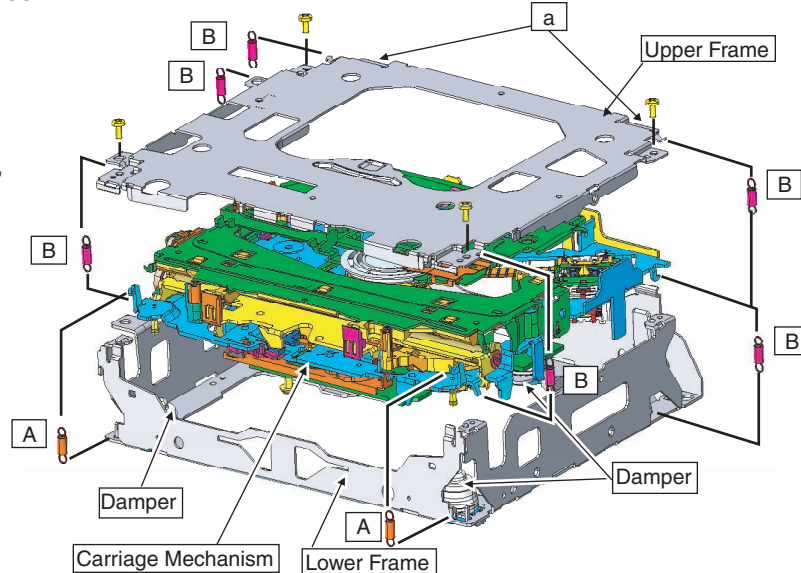


Do not squeeze this area.

### ● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

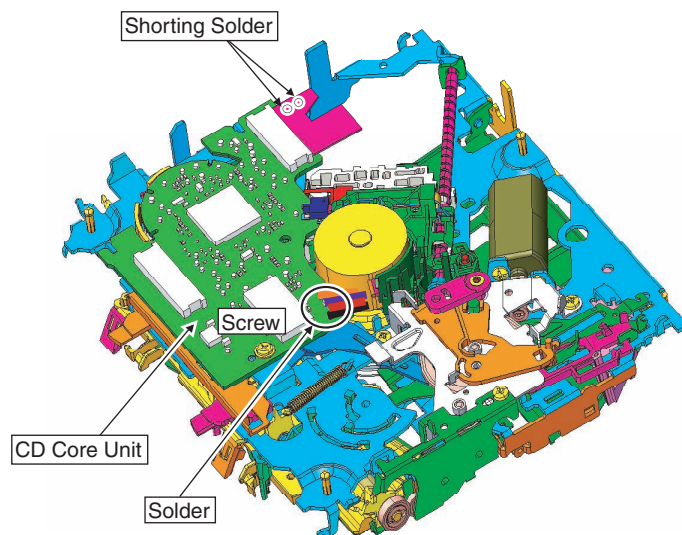
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.



### ● How to remove the CD Core Unit

1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
2. Unsolder the four leads, and loosen the Screw.
3. Remove the CD Core Unit.

Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.

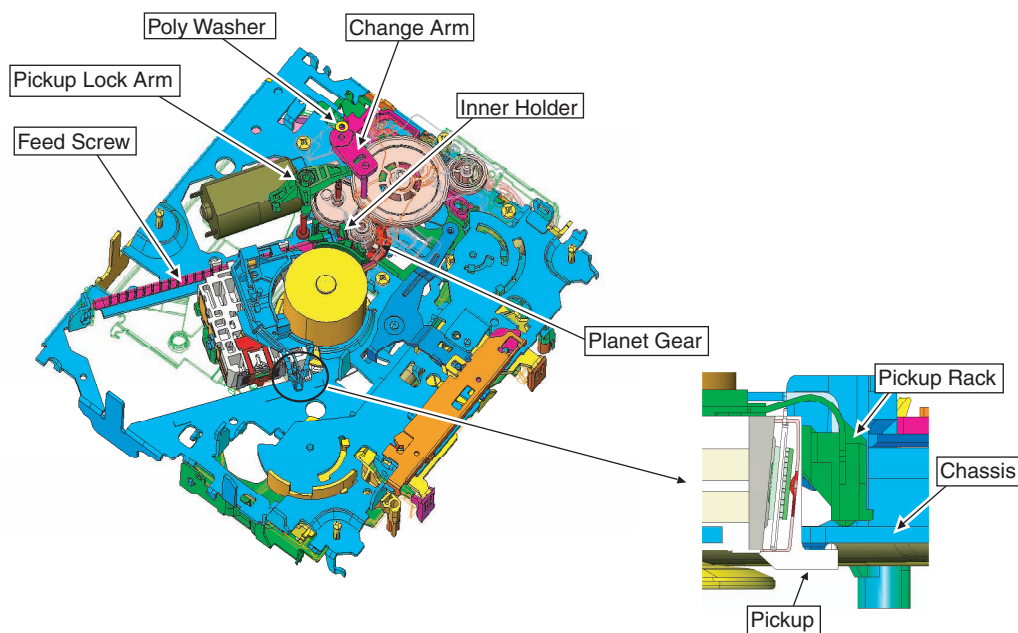


### ● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



## • Notes on disassembly

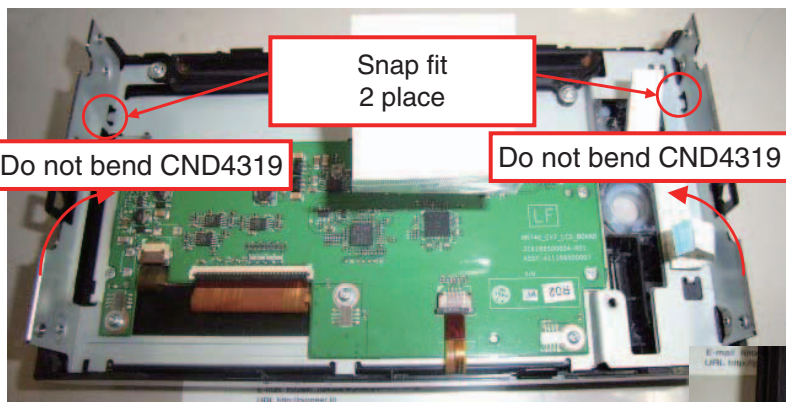
- When separating the MONITOR ASSY from the MAIN UNIT ASSY, do so slowly. Two FFCs (CDE8554, CDE8556) and one CODE ASSY (CDE8559) are connected. The strength of the joint part of the code and terminals of CDE8559 (CODE ASSY for Bluetooth to connect the keyboard unit and navi unit) is weak, it may break or the code may extend. Remove after peeling off the tape of CDE8556 and the shield.



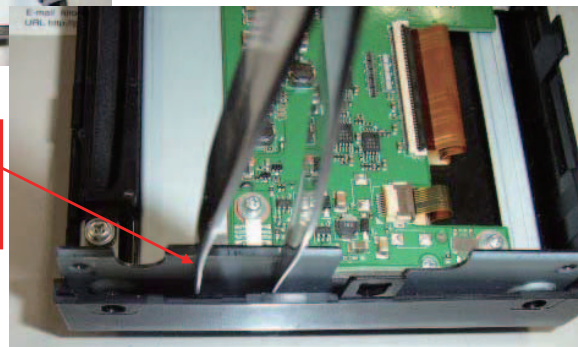
CDE8559

★ Actually does the CODE ASSY (CDE8559) to a left connector of a round inclosing.

- When demounting LCD PANEL ASSY from the grille, be careful not to bend LCD plate (CND4319) as there are snap fits on the right and left. Demount LCD PANEL ASSY by extending snap fits on the grille side.

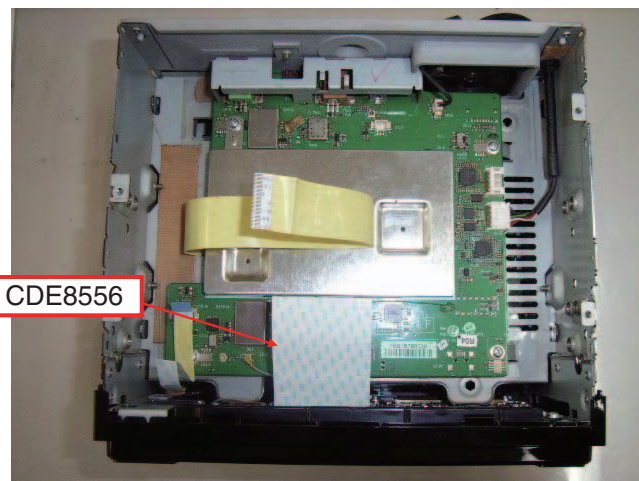


Remove snap fits by extending them on the grille side using tweezers or bamboo tweezers.

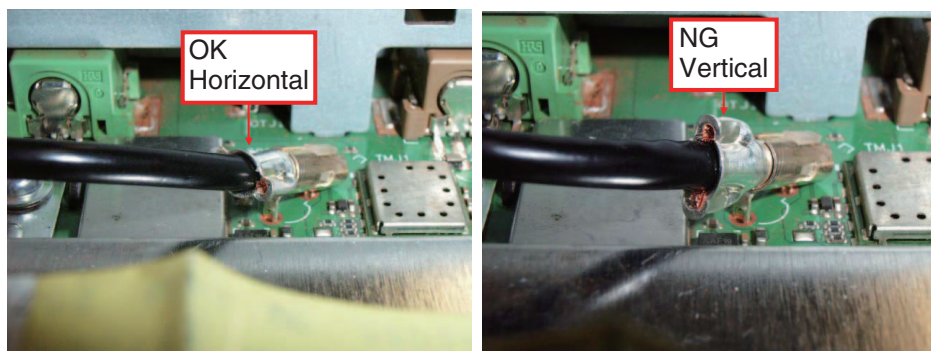




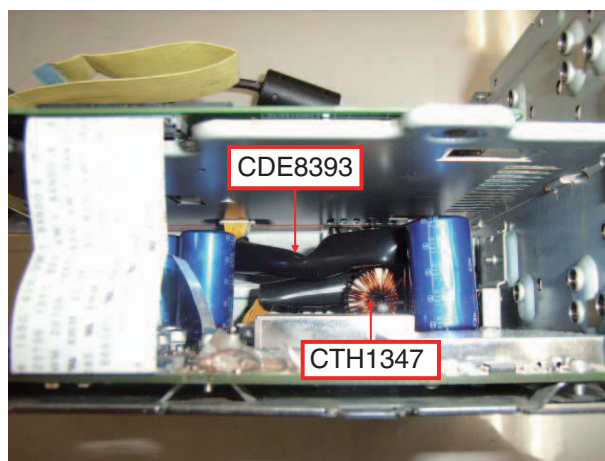
- Be sure to remove the MONITOR ASSY after removing the CD mecha.  
If the procedure is done oppositely, the FFC (CDE8556) connecting the MONITOR ASSY and the MAIN UNIT ASSY will be damaged. At assembly, be sure to fix the MONITOR ASSY first and then fix the CD mecha. If it is done oppositely, the FFC (CDE8556) cannot be folded as intended under the CD mecha.



- When connecting the code assy connecting 1F AV UNIT and 2F NAVI UNIT (CDH1381) on NAVI UNIT side, do so as shown below.

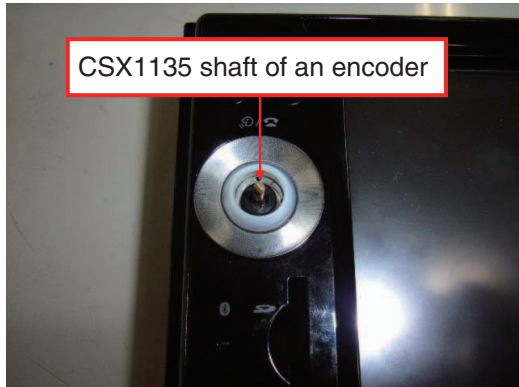


- The code assy connecting 1F AV UNIT and 2F NAVI UNIT (CDE8393) shall be fitted on the back side of the choke coil (CTH1347) after 1F Chassis Unit and 2F Chassis Unit are fixed, as shown below.



- When mounting KNOB ASSY (CXC8994, CXC8995) in the MONITOR ASSY, be careful to don't destroy encoder part.

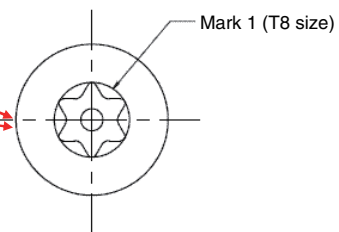
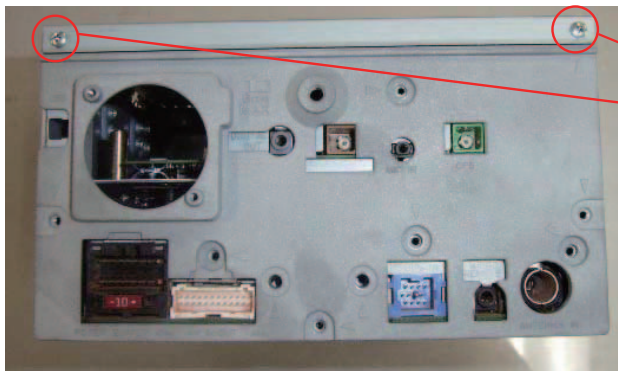
A



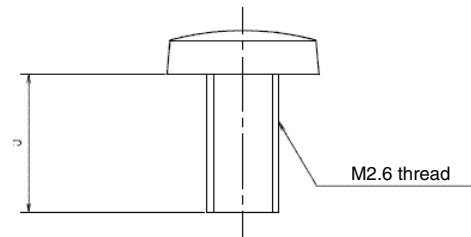
B

- Since two case (CNB3472) fixing screws are 'TORX tamper' (tamper-proof screws with a projection in TORX), a special tool is required.  
TORX screwdriver(T8) : GGK1068

C



D



E

F

## 8. EACH SETTING AND ADJUSTMENT

### 8.1 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT



- **Note :**

The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

- **Purpose :**

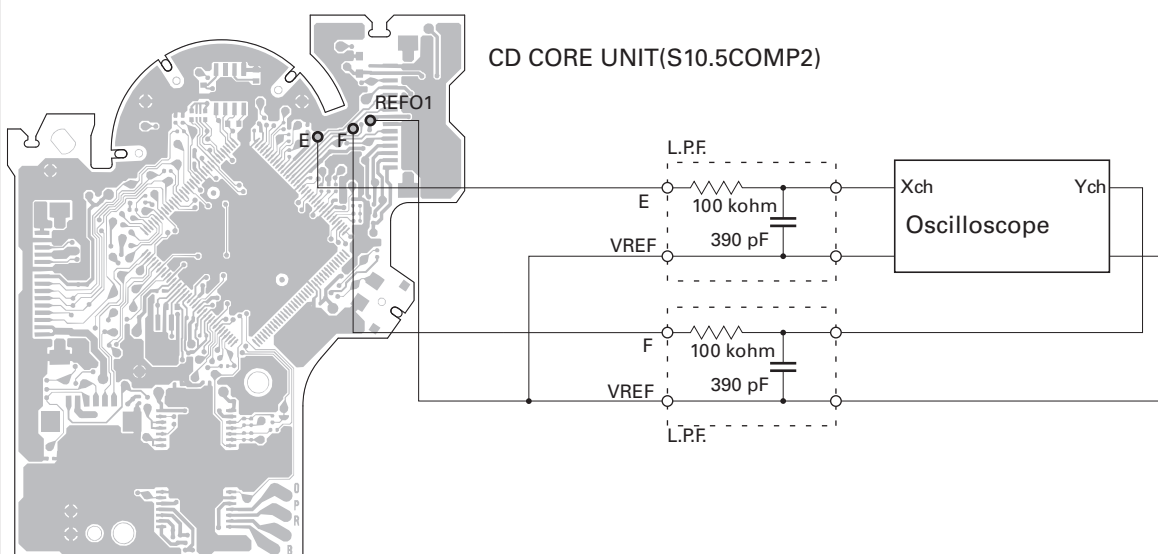
To check that the grating is within an acceptable range when the PU unit is changed.

- **Symptoms of Mal-adjustment :**

If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

- **Method :**

- |                       |                            |
|-----------------------|----------------------------|
| • Measuring Equipment | • Oscilloscope, Two L.P.F. |
| • Measuring Points    | • E, F, REFO1              |
| • Disc                | • TCD-782                  |
| • Mode                | • TEST MODE                |



- **Checking Procedure**

1. In test mode, load the disc and switch the 3 V regulator on.
2. Using the key 08 and key 09, move the PU unit to the innermost track.
3. Press key 03 to close focus, the display should read "91". Press key 02 to implement the tracking balance adjustment the display should now read "81". Press key 3. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75 degrees. Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75 degrees try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75 degrees then the mechanism should be judged to be at fault.

- **Note**

Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" ( the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

- **Hint**

Reloading the disc changes the clamp position and may decrease the "wobble".

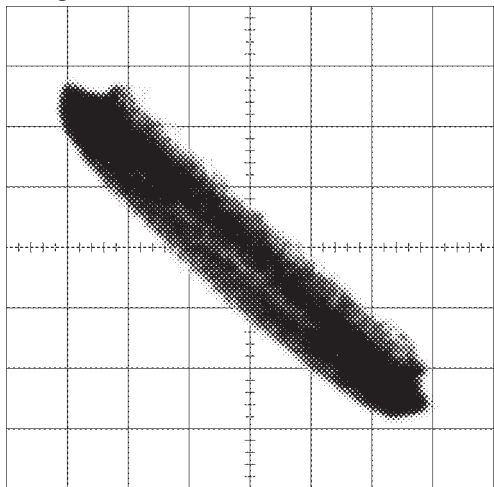
**Grating waveform**

Ech → Xch 20 mV/div, AC

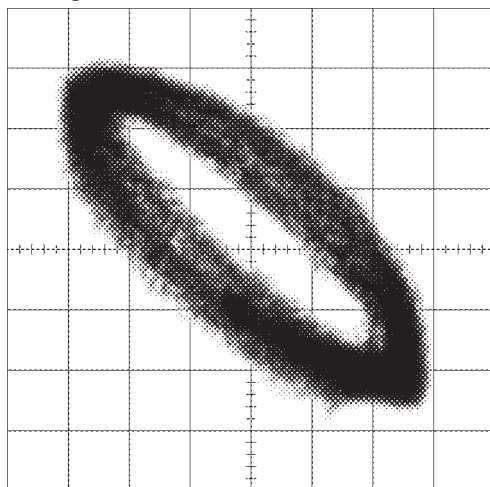
Fch → Ych 20 mV/div, AC

A

0 degrees

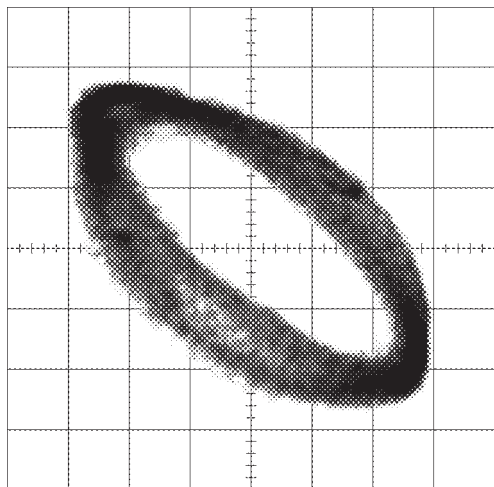


30 degrees

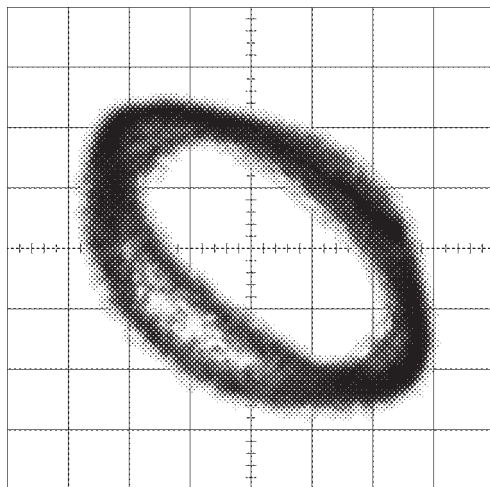


B

45 degrees



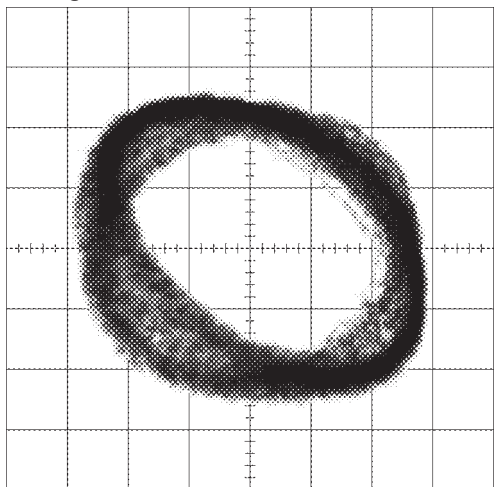
60 degrees



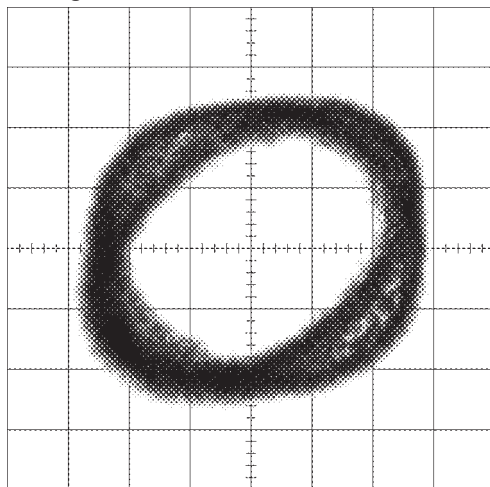
C

D

75 degrees



90 degrees



E

F

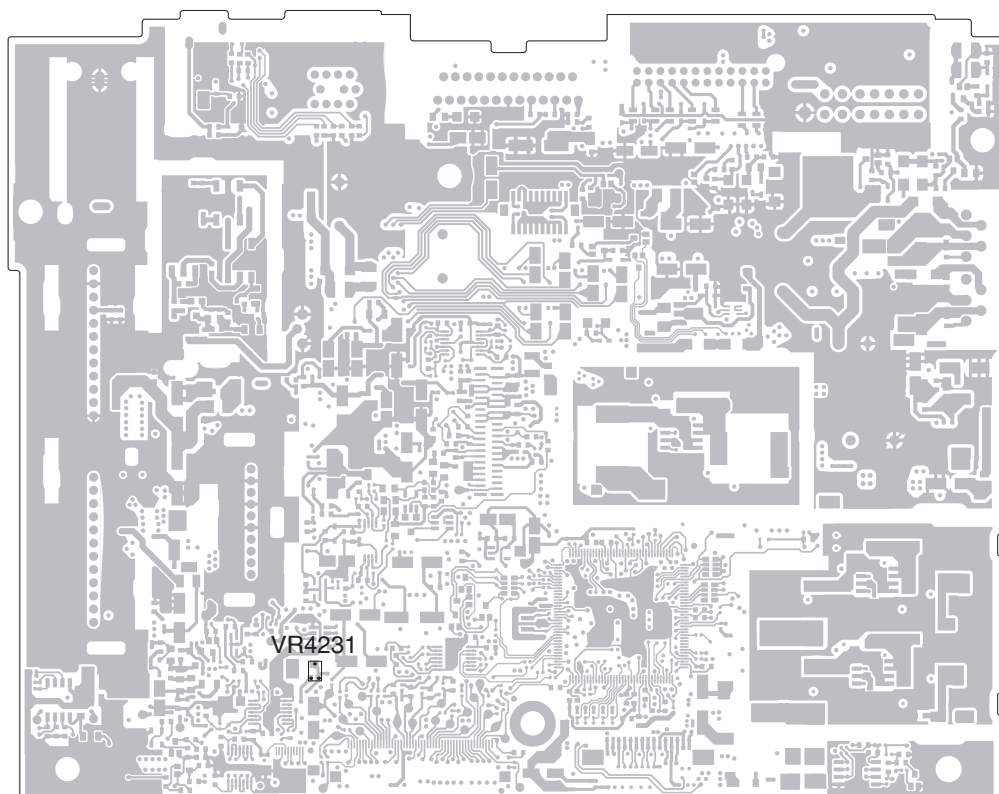


## 8.2 AV UNIT ADJUSTMENT

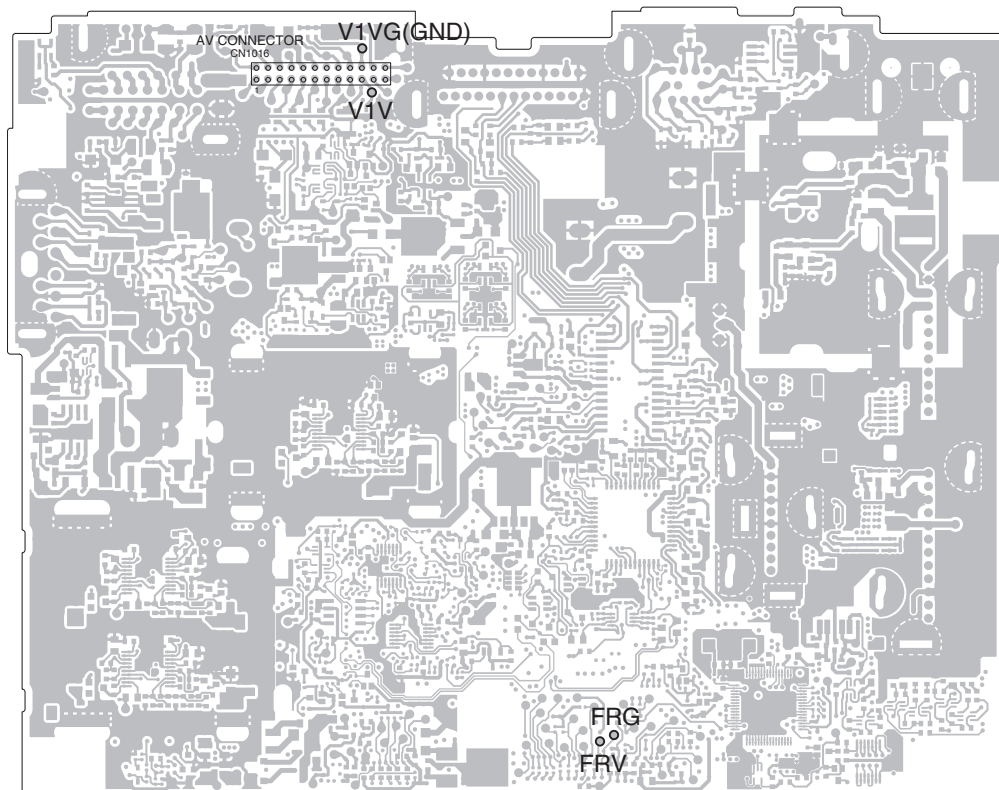


● Adjustment point


AV UNIT(SIDE A)



AV UNIT(SIDE B)



● AV UNIT ADJUSTMENT

Step	Adjustment item	Mode	Input signal (Input test pin, specs, other conditions)	Output signal (Measurement point, wave pattern)	Masuring instruments	Specs	Adjusting point
1	Video level adjustment	AV selector VTR1	TP V1V, V1VG (GND) 100 IRE (white100%) 1.0 Vp-p (Input via 75 ohm)	Measurement point: FRV FRG (GND)  (To measure the AV Unit only, connect 1.4 kohm between TP FRV and FRG.) 	Oscilloscope	• 1.00 V ± 0.02 Vp-p  Measure between the sync tip and 100 IRE (wave top).  Symptoms with poor adjustment. Over level: Luminance is too high. Under level: Luminance is too low.	VR4231

### 8.3 FLICKER ADJUSTMENT



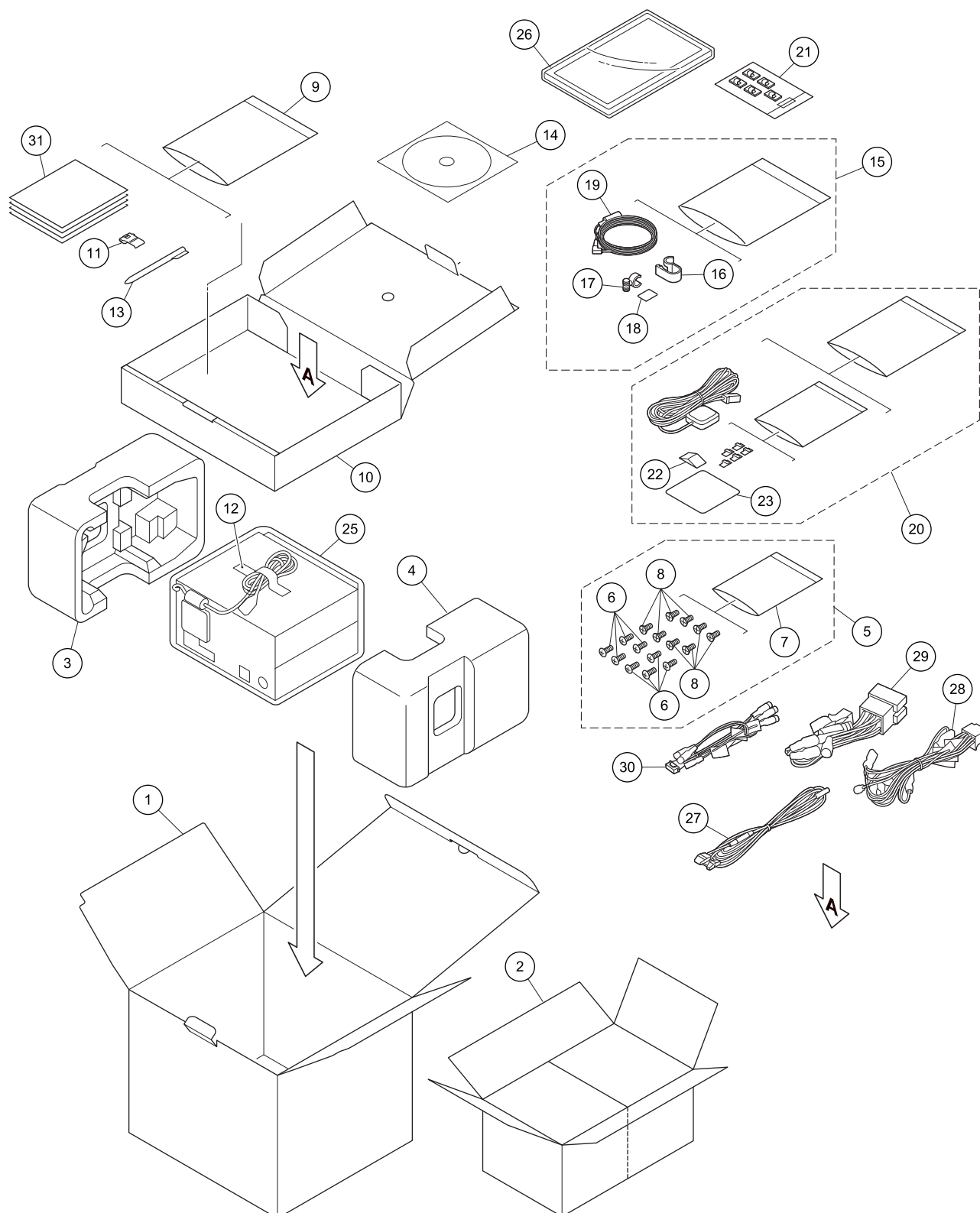
#### ● FLICKER ADJUSTMENT

	Adjustment item	Measurement point	Adjustment point	The contents of adjustment	Remarks
1	Aging			Input white 100% signal. Leave for more than 30 minutes in operation mode.	
2	Flicker adjustment	Screen	LCVR1	Adjust the flicker level to minimum from all directions.	Signal for Flicker adjustment... Select "Graphics" -> "Flicker Adjustment" in the Test Mode. (Input a signal for alternate white and black line. The luminance level of the input signal : 50%)

# 9. EXPLODED VIEWS AND PARTS LIST

NOTES : • Parts marked by " \* " are generally unavailable because they are not in our Master Spare Parts List.  
 • The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.  
 • Screw adjacent to ▽ mark on the product are used for disassembly.  
 • For the applying amount of lubricants or glue, follow the instructions in this manual.  
 (In the case of no amount instructions, apply as you think it appropriate.)

## 9.1 PACKING



Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Unit Box	See Contrast table(2)	20	GPS Antenna Assy	CXC8574
2	Contain Box	See Contrast table(2)			
3	Protector	See Contrast table(2)	21	Attachment Assy	CEA4636
4	Protector	See Contrast table(2)	22	Water Proof Pad	CZN7150
5	Screw Assy	See Contrast table(2)	23	Sheet	CZN7151
			24	.....	
6	Screw	BMZ50P060FTC	25	Polyethylene Bag	See Contrast table(2)
* 7	Polyethylene Bag	CEG-127			
8	Screw	See Contrast table(2)	26	Panel	See Contrast table(2)
9	Polyethylene Bag	CEG1116	27	Cord	CDE6825
10	Sub Unit Box	CHG6491	28	Cord Assy	See Contrast table(2)
			29	Cord Assy	See Contrast table(2)
11	Connector	CKX1049	30	Cord Assy	See Contrast table(2)
12	Seal	CNN2515			
13	Pen	CNV8969	31-1	Installation Manual	See Contrast table(2)
14	CD-ROM	See Contrast table(2)	31-2	Caution Card	See Contrast table(2)
15	Microphone Assy	CPM1064	* 31-3	Registration Card	See Contrast table(2)
			* 31-4	Warranty Card	See Contrast table(2)
16	Clip Holder	CZN5471	31-5	Owner's Manual	See Owner's manual parts list(3)
17	Microphone Holder	CZN5472			
18	Cushion	CZN5473	* 31-6	Passport	See Contrast table(2)
* 19	Microphone	CZX5059	* 31-7	Caution Card	See Contrast table(2)

(2) CONTRAST TABLE

AVIC-F700BT/XS/UC, AVIC-F7010BT/XS/UC and AVIC-F700BT/XS/EW5 are constructed the same except for the following:

Mark	No.	Description	AVIC-F700BT/XS/UC	AVIC-F7010BT/XS/UC	AVIC-F700BT/XS/EW5
	1	Unit Box	CHG6484	CHG6573	CHG6482
	2	Contain Box	CHL6484	CHL6573	CHL6482
	3	Protector	CHP3552	CHP3552	CHP3550
	4	Protector	CHP3553	CHP3553	CHP3551
	5	Screw Assy	CEA3797	CEA3797	CEA7395
	8	Screw	CMZ50P060FTC(x8)	CMZ50P060FTC(x8)	CMZ50P060FTC(x4)
	14	CD-ROM	Not Used	Not Used	CPJ1262
	25	Polyethylene Bag	CEG1402	CEG1402	CEG1401
	26	Panel	Not Used	Not Used	CNS8665
	28	Cord Assy	CDP1137	CDP1137	Not Used
	29	Cord Assy	Not Used	Not Used	CDP1138
	30	Cord Assy	CDP1143	CDP1143	CDP1092
	31-1	Installation Manual	CRD4335	CRD4335	CRD4336
	31-2	Caution Card	CRP1310	CRP1310	Not Used
*	31-3	Registration Card	CRY1271	CRY1271	Not Used
*	31-4	Warranty Card	CRY1246	CRY1246	CRY1265
*	31-6	Passport	Not Used	Not Used	CRY1268
*	31-7	Caution Card	CRP1376	CRP1376	CRP1375

### Installation Manual

Part No.	Language
CRD4335	English, French
CRD4336	English, Spanish, German, French, Italian, Dutch

## (3) OWNER'S MANUAL PARTS LIST

A

AVIC-F700BT/XS/UC		AVIC-F7010BT/XS/UC		AVIC-F700BT/XS/EW5	
Part No.	Language	Part No.	Language	Part No.	Language
CRB2684	English	CRB2684	English	CRB2700	English
CRB2685	French	CRB2685	French	CRB2701	Spanish
CRB2686	English	CRB2686	English	CRB2702	German
				CRB2703	French
CRB2687	French	CRB2687	French		
				CRB2704	Italian
				CRB2705	Dutch
				CRB2706	English
				CRB2707	Spanish
				CRB2708	German
				CRB2709	French
				CRB2710	Italian
				CRB2711	Dutch

B

C

D

E

F

■

5

■

6

■

7

■

8

■

A

■

B

■

C

■

D

■

E

■

F

■

5

■

6

■

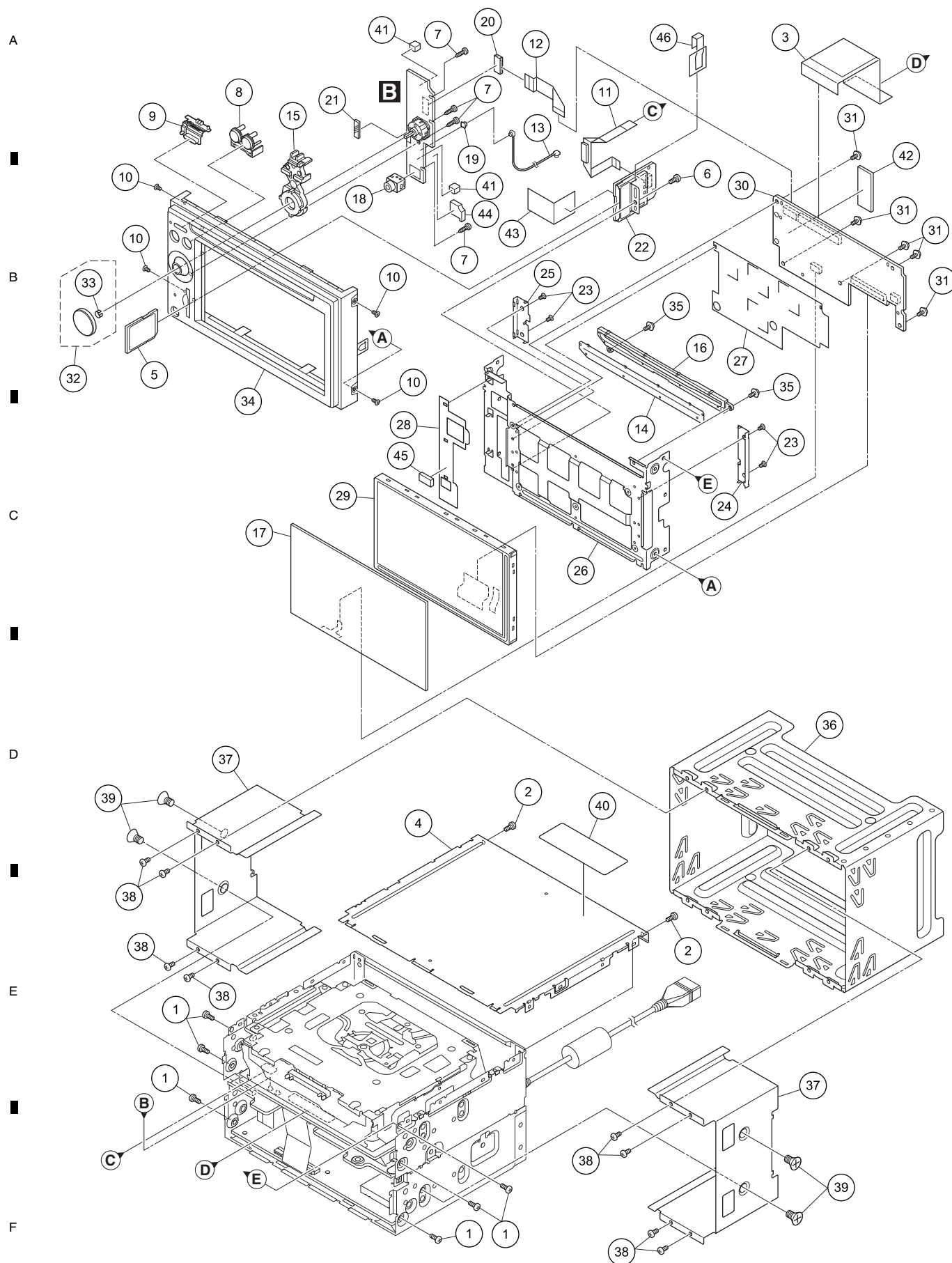
7

■

8

■

## 9.2 EXTERIOR(1)





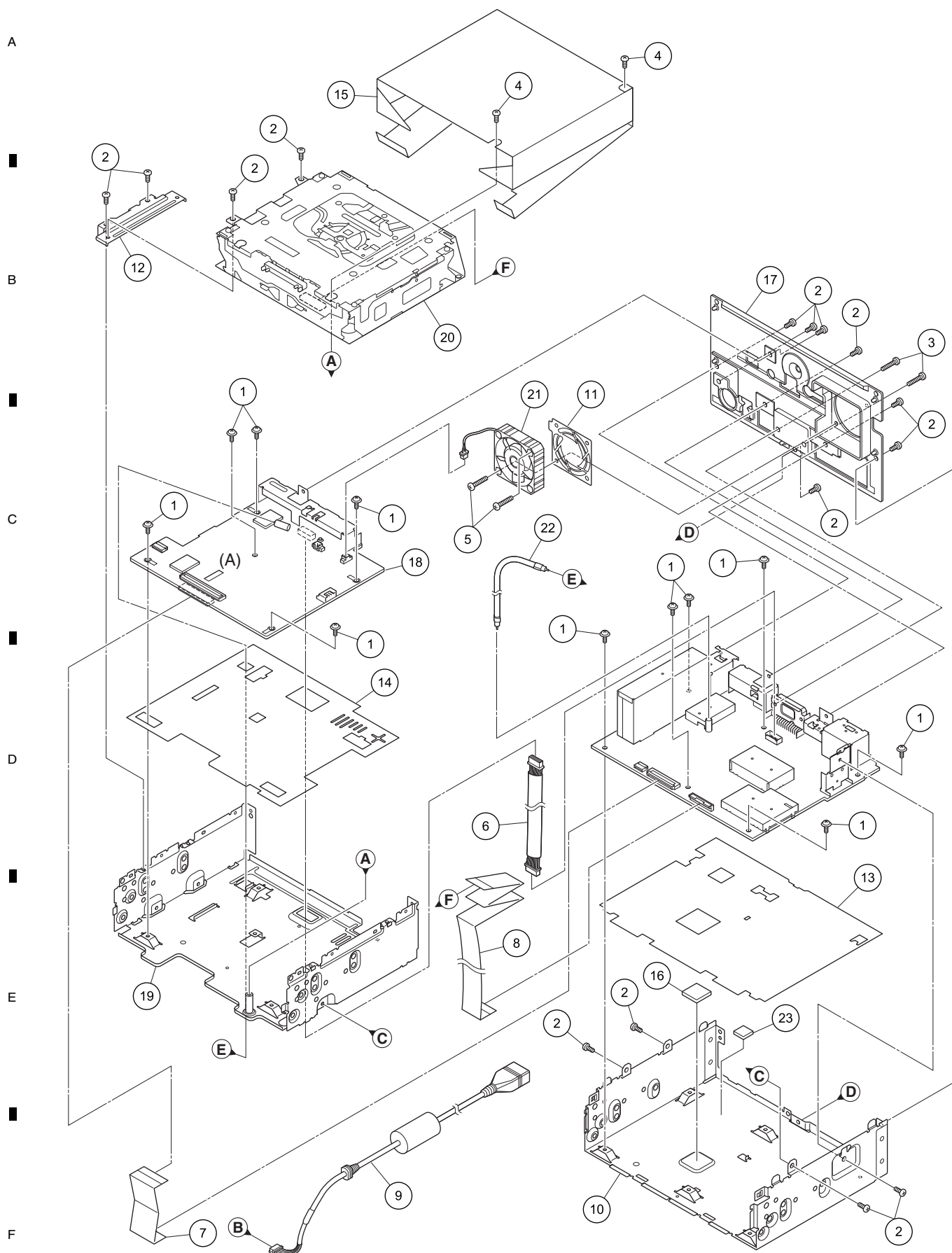
Mark No.	Description	Part No.	Mark No.	Description	Part No.	
1	Screw	BMZ26P050FTC	25	Holder	CND3759	
2	Screw	CBA2145				
3	FFC	CDE8556	26	Holder	CND4319	A
4	Case	CNB3472	27	Insulator	CNN2044	
5	Card	CNW1231	28	Insulator	CNN2045	
			29	LCD Module	CWX3611	
6	Screw	BMZ26P050FTC	30	Panel Unit	CWX3651	
7	Screw	BPZ20P080FTC				
8	Button(MENU, MAP)	CAI1707	31	Screw	PMB20P040FTC	
9	Button(RESET, EJECT)	CAI1708	32	Knob Unit	See Contrast table(2)	
10	Screw(M2 x 3)	CBA1797	33	Spring	YBL5013	
			34	Grille Unit	See Contrast table(2)	
11	FFC	CDE8554	35	Screw	IMS26P040FTC	B
12	FFC	CDE8555				
13	Cord Assy	CDE8559	36	Holder	See Contrast table(2)	
14	Cover	CNN2046	37	Holder	See Contrast table(2)	
15	Lighting Conductor	CNV9902	38	Screw	See Contrast table(2)	
			39	Screw	See Contrast table(2)	
16	Holder	CNV9903	40	Label	See Contrast table(2)	
17	Touch Panel	CSX1136				
18	Jack(CN802)	CKN1049	41	Gasket	CNN2501	
19	Connector(CN803)	CKS5749	42	Gasket	CNN2533	
20	Connector(CN801)	CKS5862	43	Insulator	CNN2534	
			44	Cushion	See Contrast table(2)	C
21	Antenna(ANT801)	CTX1095	45	Gasket	See Contrast table(2)	
22	SD Unit	CWX3652				
23	Screw(M2 x 2)	CBA1771	46	Insulator	See Contrast table(2)	
24	Holder	CND3758				

## (2) CONTRAST TABLE

AVIC-F700BT/XS/UC, AVIC-F7010BT/XS/UC and AVIC-F700BT/XS/EW5 are constructed the same except for the following:

Mark	No.	Description	AVIC-F700BT/XS/UC	AVIC-F7010BT/XS/UC	AVIC-F700BT/XS/EW5
	32	Knob Unit	CXC8995	CXC8995	CXC8994
	34	Grille Unit	CXC8990	CXC9776	CXC8991
	36	Holder	Not Used	Not Used	CND3430
	37	Holder	Not Used	Not Used	CND3431
	38	Screw	Not Used	Not Used	BMZ30P060FTB
	39	Screw	Not Used	Not Used	CMZ50P060FTC
	40	Label	Not Used	Not Used	CAN5448
	44	Cushion	CNN2723	CNN2723	Not Used
	45	Gasket	CNN2724	CNN2724	Not Used
	46	Insulator	CNN2725	CNN2725	Not Used

## 9.3 EXTERIOR(2)



(A) GYH1031(Mylay tape)

\* Hold the flexible cable to the shield on the Navi Unit.

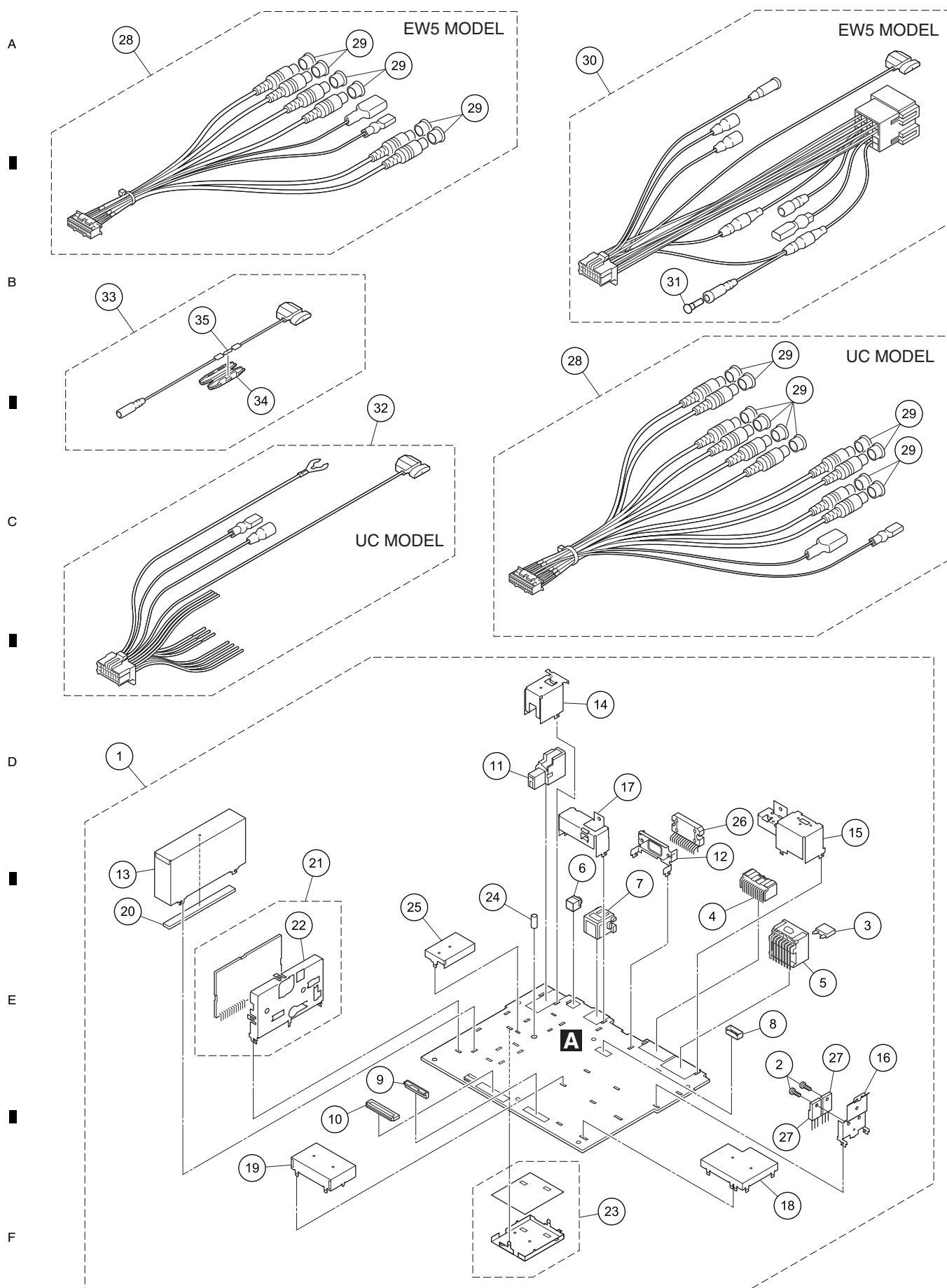
<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	Screw	ASZ26P050FTC	13	Insulator	CNN2042
2	Screw	BMZ26P050FTC	14	Insulator	CNN2043
3	Screw	BMZ26P160FTB	15	Sheet	CNN2281
4	Screw	BSZ26P050FTB			
5	Screw(M2.6 x 12)	CBA2102	16	Sheet	CNN2294
			17	Heat Sink	CNR1944
6	Cord Assy	CDE8393	18	Navi Unit(U1)	See Contrast table(2)
7	FFC	CDE8550	19	Chassis Unit	CXC8981
8	FFC	CDE8552	20	CD Mechanism Module(S10.5)	CXK5763
9	Cord Assy	CDE8561			
10	Chassis	CNA3042	21	Fan Motor	CXM1320
			22	Cord Assy	See Contrast table(2)
11	Cover	CND3917	23	Gasket	CNN2529
12	Bracket	CND4564			

(2) CONTRAST TABLE

AVIC-F700BT/XS/UC, AVIC-F7010BT/XS/UC and AVIC-F700BT/XS/EW5 are constructed the same except for the following:

Mark	No.	Description	AVIC-F700BT/XS/UC	AVIC-F7010BT/XS/UC	AVIC-F700BT/XS/EW5
	18	Navi Unit(U1)	CWX3641	CWX3641	CWX3639
	22	Cord Assy	Not Used	Not Used	CDH1381

## 9.4 EXTERIOR(3)



## (1) EXTERIOR(3) SECTION PARTS LIST

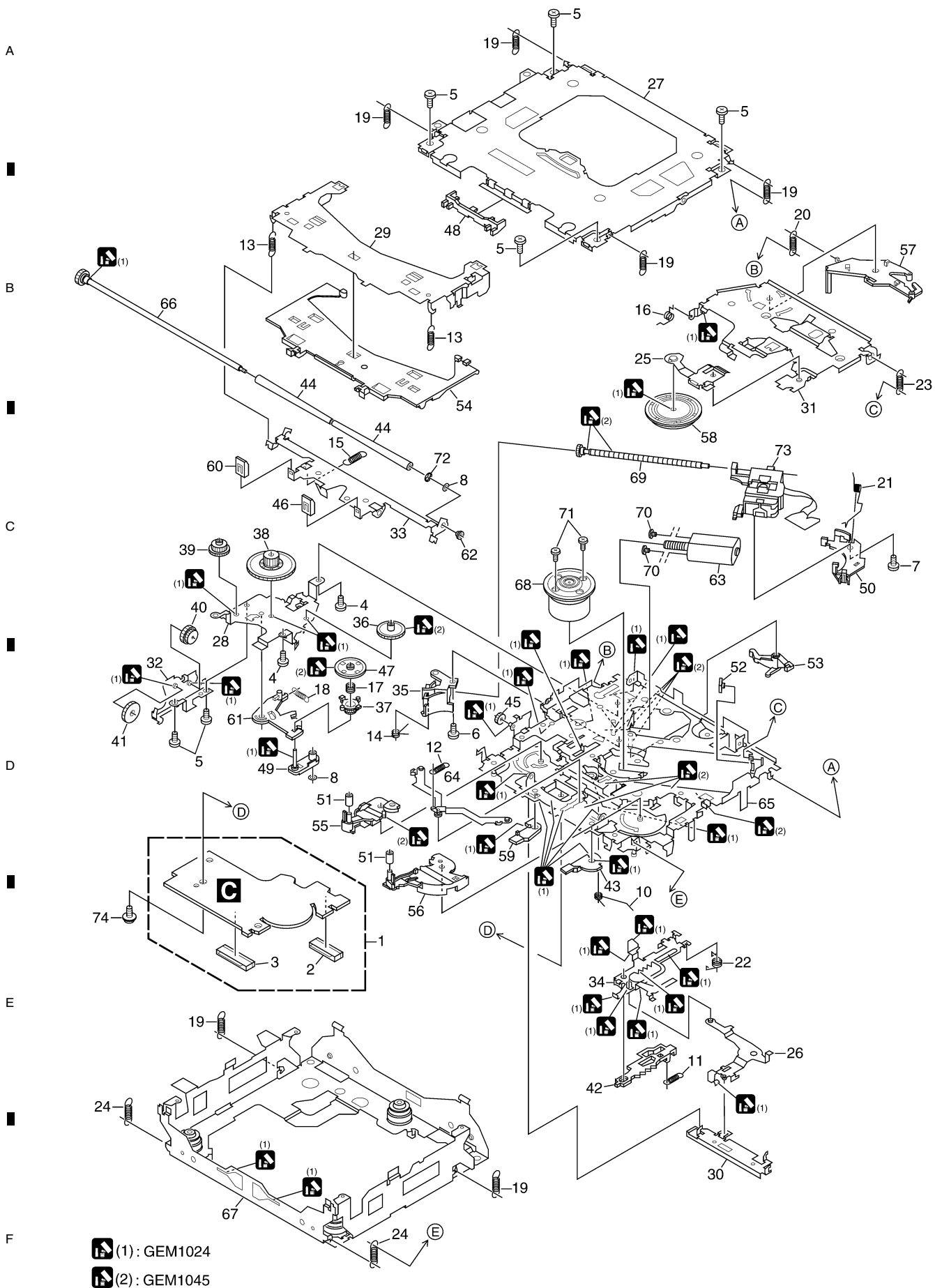
<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
1	AV Unit	See Contrast table(2)	19	Shield	CND4563
2	Screw	BMZ26P060FTC	20	Sheet	CNM9805
⚠ 3	Fuse(10 A)	CEK1208			
4	Connector(CN1016)	CKM1460	21	FM/AM Tuner Unit(Y1461)	See Contrast table(2)
5	Plug(CN1005)	CKM1550	22	Holder	CND4324
			23	Shield Unit	CXC8983
6	Jack(CN1015)	CKN1042	24	Pin Jack(CN1441)	See Contrast table(2)
7	Connector(CN1021)	See Contrast table(2)	25	Shield	See Contrast table(2)
8	Connector(CN1001)	CKS4674			
9	Connector(CN701)	CKS4808	26	IC(IC1007)	PAL007C
10	Connector(CN1000)	CKS5732	27	IC(IC2801, IC2820)	BA00CC0WCP-V5
			28	Cord Assy	See Contrast table(2)
11	Antenna Jack(ANT1401)	CKX1060	29	Cap	CNV6727
12	Holder	CNC9921	30	Cord Assy	See Contrast table(2)
13	Shield	CND3004			
14	Holder	CND3181	31	Terminal Cover	See Contrast table(2)
15	Holder	CND3693	32	Cord Assy	See Contrast table(2)
			33	Cord	CDE6825
16	Holder	CND3695	34	Cap	CNS1472
17	Holder	See Contrast table(2)	35	Resistor	RS1/2PMF102J
18	Shield	CND4320			

## (2) CONTRAST TABLE

AVIC-F700BT/XS/UC, AVIC-F7010BT/XS/UC and AVIC-F700BT/XS/EW5 are constructed the same except for the following:

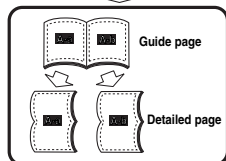
<u>Mark</u>	<u>No.</u>	<u>Description</u>	<u>AVIC-F700BT/XS/UC</u>	<u>AVIC-F7010BT/XS/UC</u>	<u>AVIC-F700BT/XS/EW5</u>
	1	AV Unit	CWN3170	CWN3170	CWN3168
	7	Connector(CN1021)	CKS3408	CKS3408	Not Used
	17	Holder	CND4314	CND4314	CND4315
	21	FM/AM Tuner Unit(Y1461)	CWE2098	CWE2098	CWE2127
	24	Pin Jack(CN1441)	Not Used	Not Used	CKX1046
	25	Shield	Not Used	Not Used	CND3769
	28	Cord Assy	CDP1143	CDP1143	CDP1092
	30	Cord Assy	Not Used	Not Used	CDP1138
	31	Terminal Cover	Not Used	Not Used	CKX-003
	32	Cord Assy	CDP1137	CDP1137	Not Used

## 9.5 CD MECHANISM MODULE



Mark No.	Description	Part No.	Mark No.	Description	Part No.	
1	CD Core Unit(S10.5COMP2)	CWX3514	50	Rack	CNV8342	
2	Connector(CN101)	CKS4911				
3	Connector(CN701)	CKS4808	51	Roller	CNV8343	A
4	Screw	BMZ20P025FTC	52	Holder	CNV8344	
5	Screw	BSZ20P040FTC	53	Arm	CNV8345	
			54	Guide	CNV8347	
6	Screw(M2 x 3)	CBA1511	55	Arm	CNV8348	
7	Screw(M2 x 4)	CBA1835				
8	Washer	CBF1038	56	Arm	CNV8349	
9	.....		57	Arm	CNV8350	
10	Spring	CBH2609	58	Clamper	CNV8365	
			59	Arm	CNV8386	
11	Spring	CBH2612	60	Guide	CNV8396	B
12	Spring	CBH2614				
13	Spring	CBH2616	61	Arm	CNV9521	
14	Spring	CBH2617	62	Collar	CNV8447	
15	Spring	CBH2620	63	Motor Unit(M2)	CXC4026	
			64	Arm Unit	CXC4027	
16	Spring	CBH2855	65	Chassis Unit	CXC4028	
17	Spring	CBH2937				
18	Spring	CBH2735	66	Gear Unit	CXC4029	
19	Spring	CBH2854	67	Frame Unit	CXC4031	
20	Spring	CBH2642	68	Motor Unit(M1)	CXC7134	
			69	Screw Unit	CXC6359	C
21	Spring	CBH2856	70	Screw	JFZ20P025FTC	
22	Spring	CBH2857				
23	Spring	CBH2860	71	Screw	JGZ17P022FTC	
24	Spring	CBH2861	72	Washer	YE20FTC	
25	Spring	CBL1686	73	Pickup Unit(P10.5)(Service)	CXX1942	
			74	Screw	IMS26P030FTC	
26	Arm	CND1909				
27	Frame	CND2582				
28	Bracket	CND2583				
29	Arm	CND2584				
30	Lever	CND2585				D
31	Arm	CND2586				
32	Bracket	CND2587				
33	Arm	CND2588				
34	Lever	CND2589				
35	Holder	CNV9522				
36	Gear	CNV7207				
37	Gear	CNV9513				
38	Gear	CNV7209				E
39	Gear	CNV9514				
40	Gear	CNV9515				
41	Gear	CNV9516				
42	Rack	CNV9517				
43	Arm	CNV7216				
44	Roller	CNV8189				
45	Gear	CNV9518				
46	Guide	CNV9519				
47	Gear	CNV7595				F
48	Guide	CNV9520				
49	Arm	CNV7805				

**A-a 1/6**

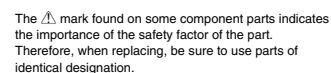


No differentiation is made between chip capacitors and discrete capacitors.

$$0.022 - B022$$



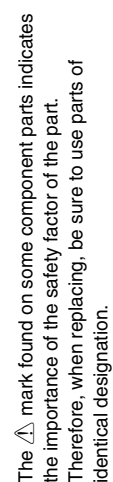

**A1/6** AV UNIT(PS/IF SECTION)



A 1/6

**A-b 1/6**





F

**A-b 1/6**





**A-a 2/6**



99



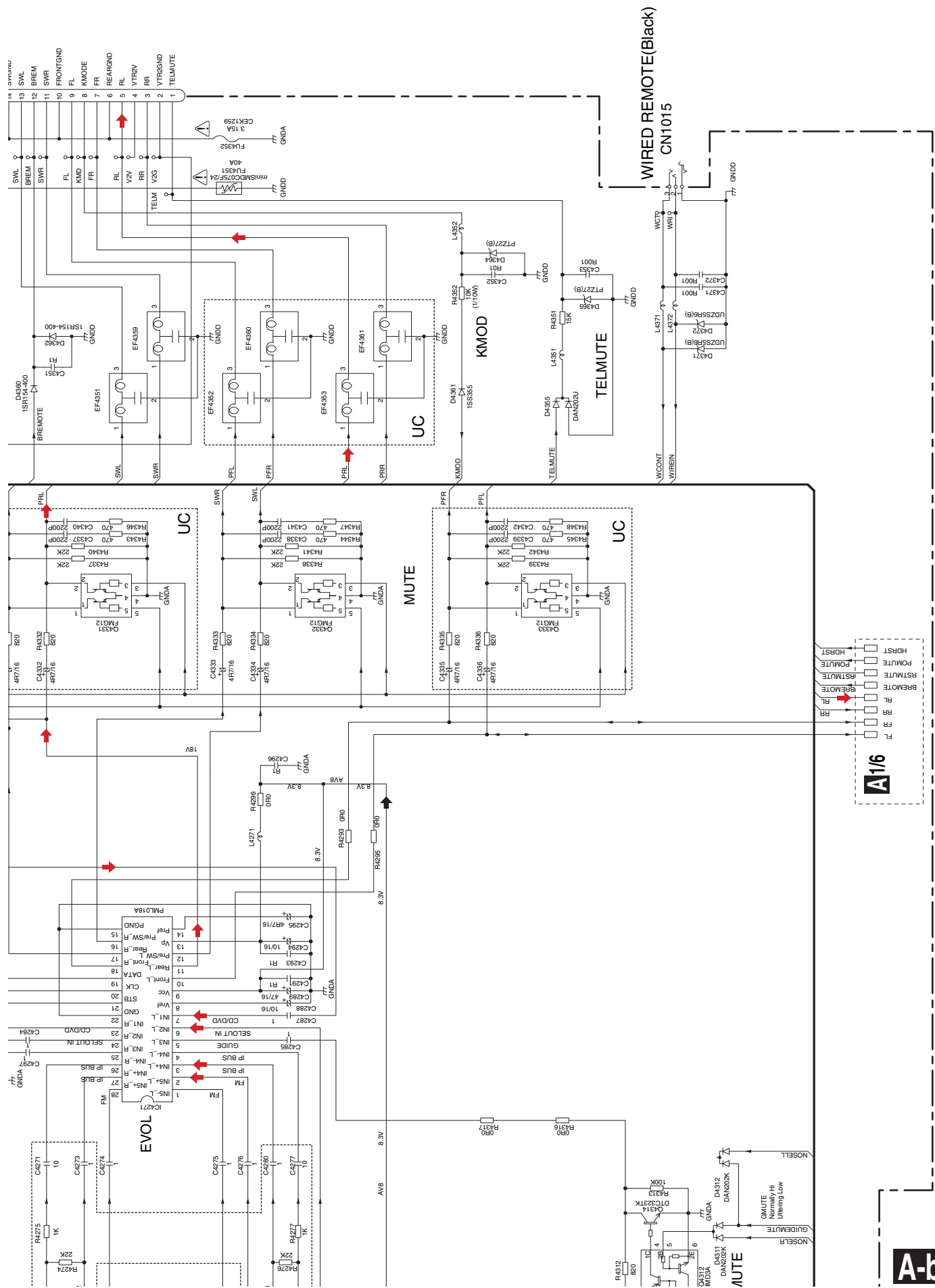
4

F

100







1

2

3

4

A

A-b 2/6

B

C

D

E

F

AV SELECTOR

8.3V

5.0V

8.3V

5.0V

8.3V

5.0V

8.3V

5.0V

8.3V

5.0V

5.0V

5.0V

1

2

3

4

A-a 2/6

AVIC-F700BT/XS/UC

1

2

3

4

UC

R4274

22K

R4272

18K

R4275

1K

R4276

1K

R4277

1K

R4278

1K

R4279

1K

R4280

1K

R4281

1K

R4282

1K

R4283

1K

R4284

1K

R4285

1K

R4286

1K

R4287

1K

R4288

1K

R4289

1K

R4290

1K

R4291

1K

R4292

1K

R4293

1K

R4294

1K

R4295

1K

R4296

1K

R4297

1K

R4298

1K

R4299

1K

R4300

1K

R4301

1K

R4302

1K

R4303

1K

R4304

1K

R4305

1K

R4306

1K

R4307

1K

R4308

1K

R4309

1K

R4310

1K

R4311

1K

R4312

1K

R4313

1K

R4314

1K

R4315

1K

R4316

1K

R4317

1K

R4318

1K

R4319

1K

R4320

1K

R4321

1K

R4322

1K

R4323

1K

R4324

1K

R4325

1K

R4326

1K

R4327

1K

R4328

1K

R4329

1K

R4330

1K

R4331

1K

R4332

1K

R4333

1K

R4334

1K

R4335

1K

R4336

1K

R4337

1K

R4338

1K

R4339

1K

R4340

1K

R4341

1K

R4342

1K

R4343

1K

R4344

1K

R4345

1K

R4346

1K

R4347

1K

R4348

1K

R4349

1K

R4350

1K

R4351

1K

R4352

1K

R4353

1K

R4354

1K

R4355

1K

R4356

1K

R4357

1K

R4358

1K

R4359

1K

R4360

1K

R4361

1K

R4362

1K

R4363

1K

R4364

1K

R4365

1K

R4366

1K

R4367

1K

R4368

1K

R4369

1K

R4370

1K

R4371

1K

R4372

1K

R4373

1K

R4374

1K

R4375

1K

R4376

1K

R4377

1K

R4378

1K

R4379

1K

R4380

1K

R4381

1K

R4382

1K

R4383

1K

R4384

1K

R4385

1K

R4386

1K

R4387

1K

R4388

1K

R4389

1K

R4390

1K

R4391

1K

R4392

1K

R4393

1K

R4394

1K

R4395

1K

R4396

1K

R4397

1K

R4398

1K

R4399

1K

R4400

1K

R4401

1K

R4402

1K

R4403

1K

R4404

1K

R4405

1K

R4406

1K

R4407

1K

R4408

1K

R4409

1K

R4410

1K

R4411

1K

R4412

1K

R4413

1K

R4414

1K

R4415

1K

R4416

1K

R4417

1K

R4418

1K

R4419

1K

R4420

1K

R4421

1K

R4422

1K

R4423

1K

R4424

1K

R4425

1K

R4426

1K

R4427

1K

R4428

1K

R4429

1K

R4430

1K

R4431

1K

R4432

1K

R4433

1K

R4434

1K

R4435

1K

R4436

1K

R4437

1K

R4438

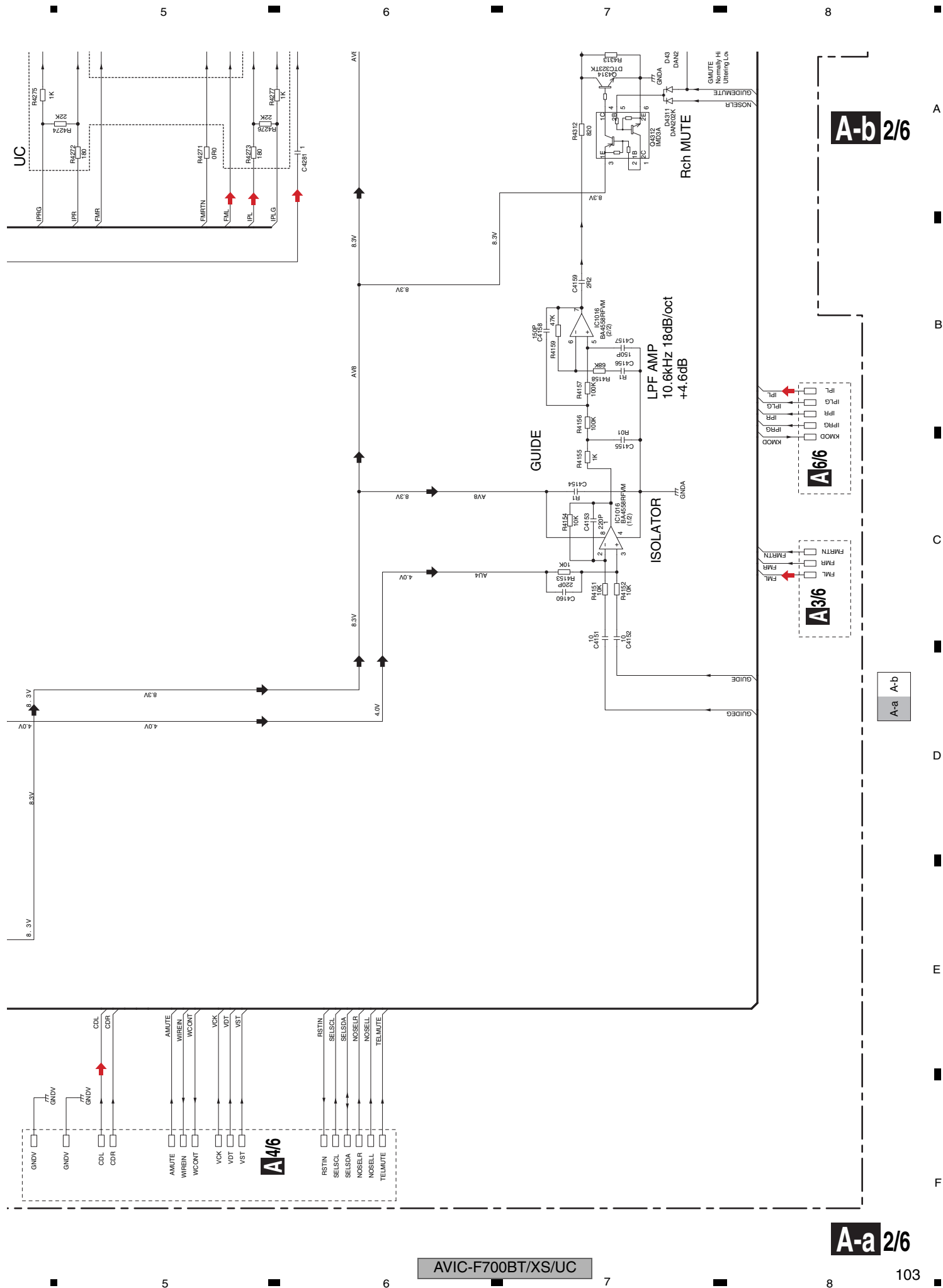
1K

R4439

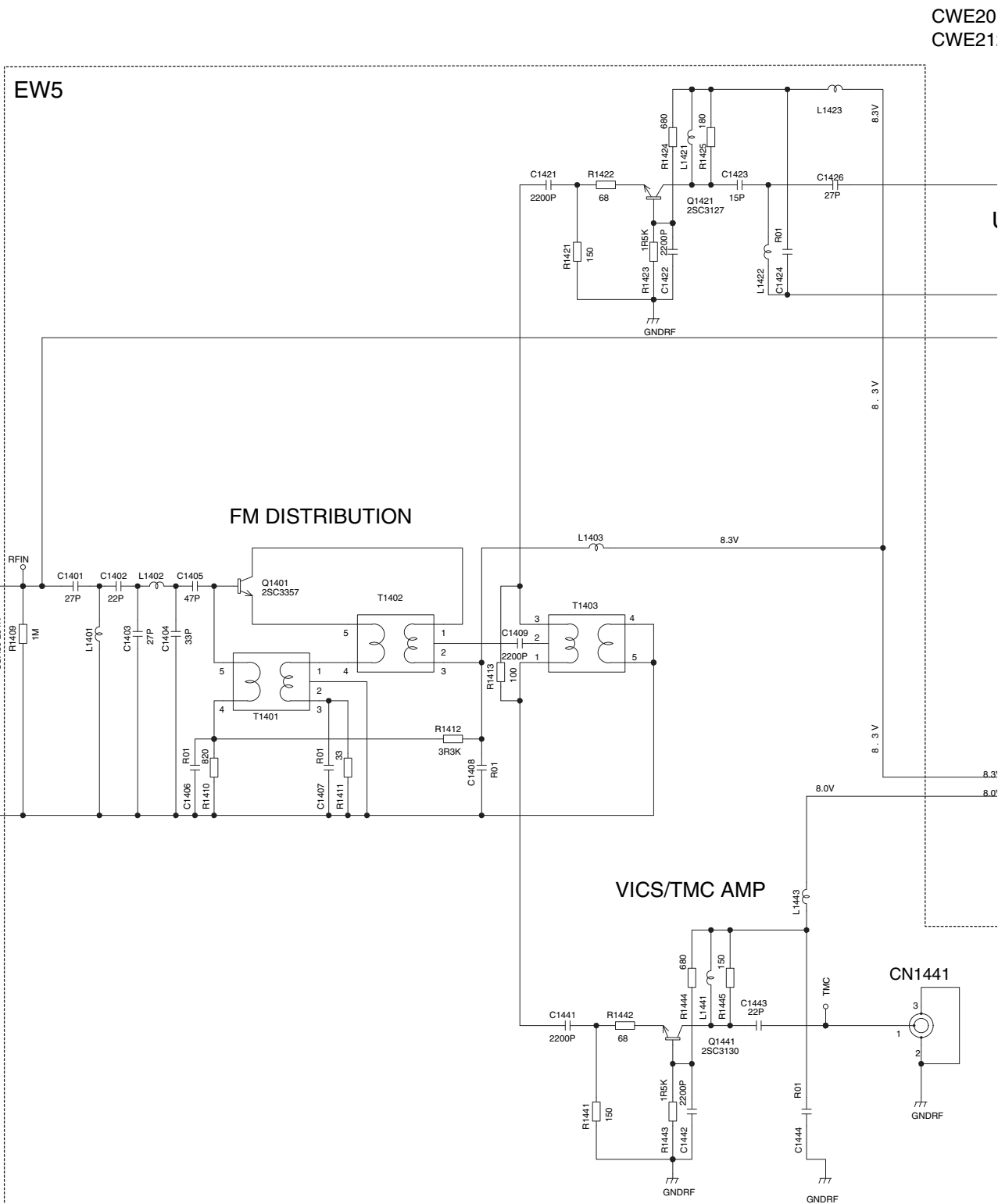
1K

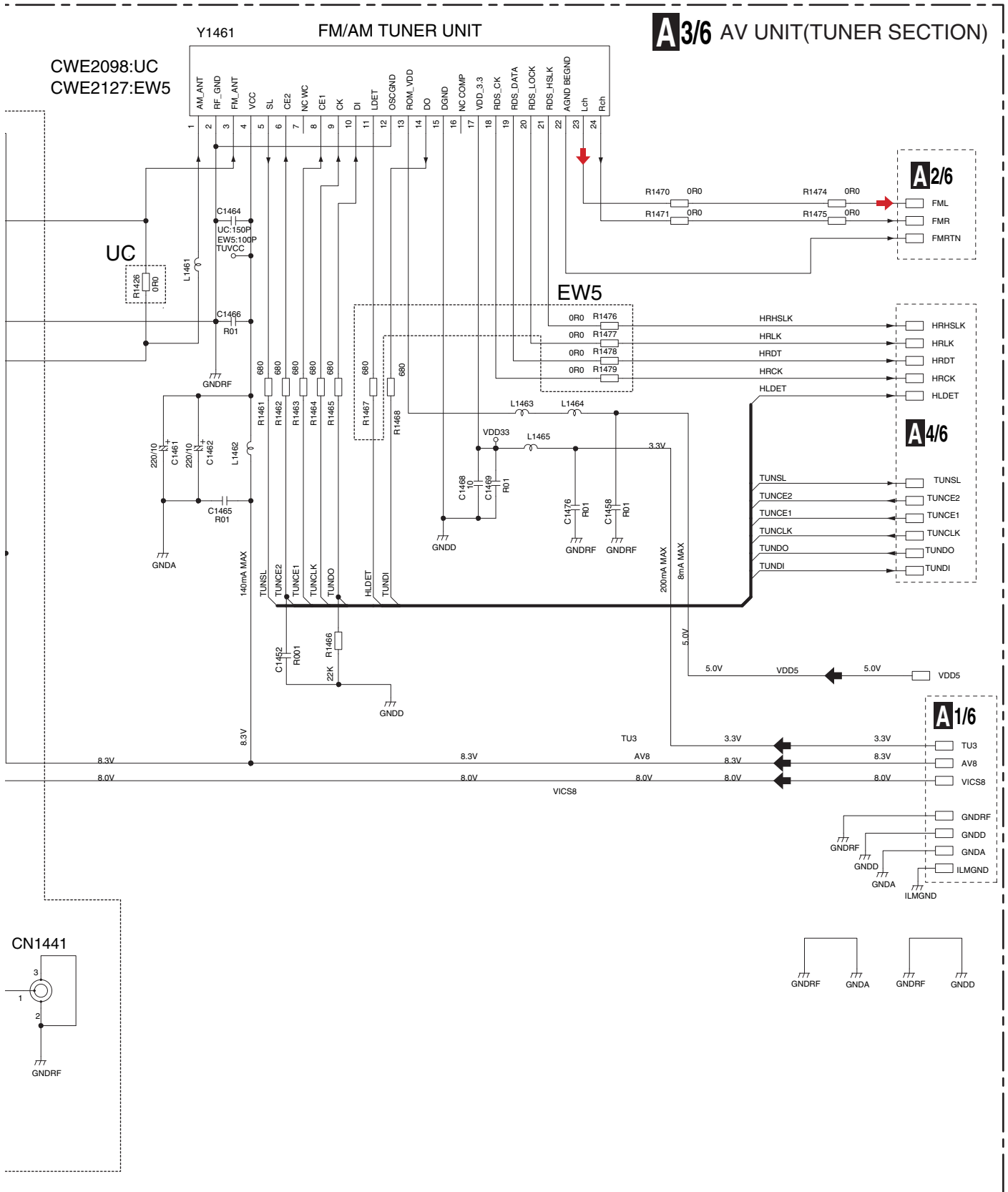
R4440

1K



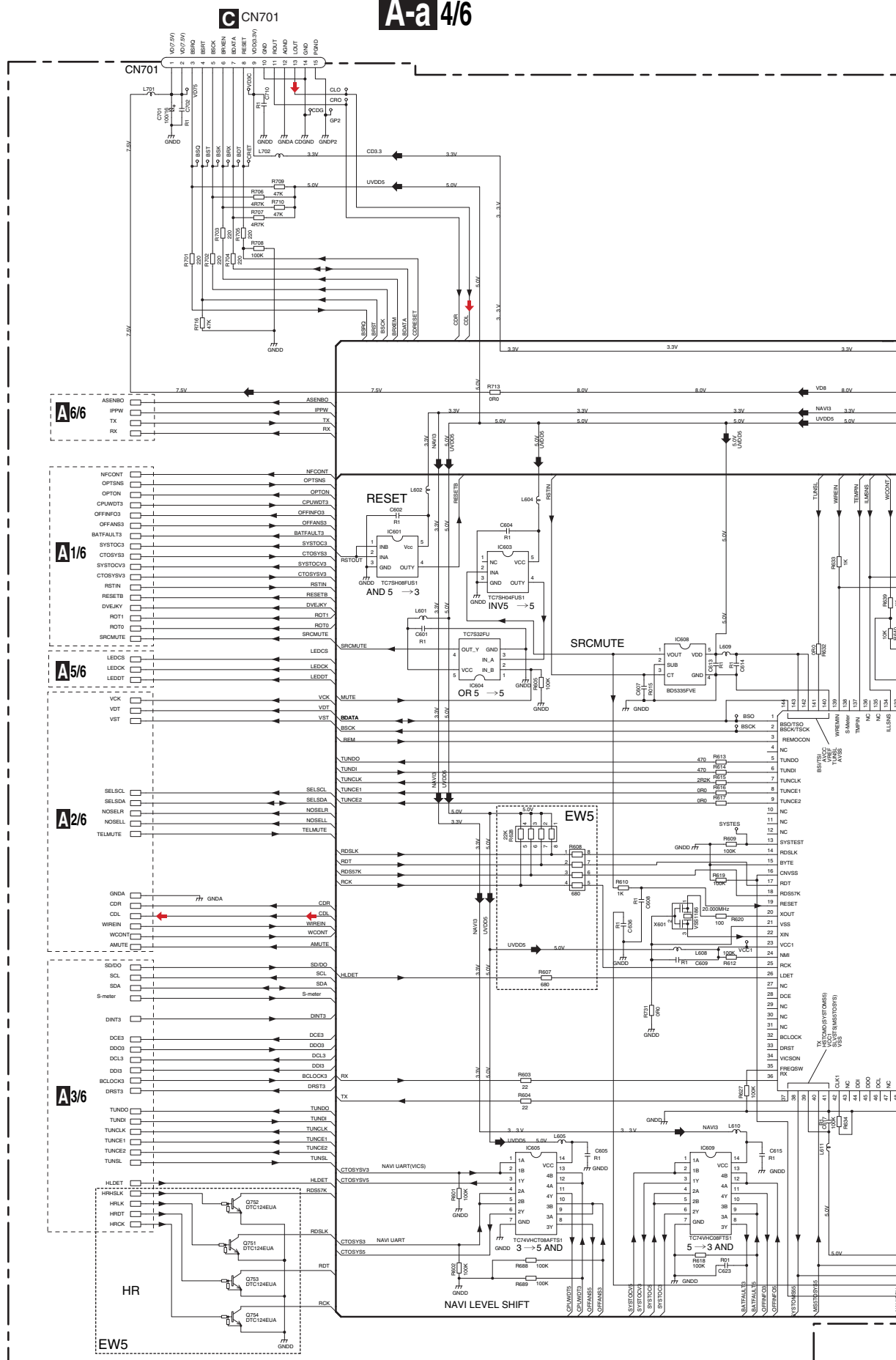
# 10.3 AV UNIT(TUNER SECTION)





# 10.4 AV UNIT(SYSTEM uCOM SECTION)(GUIDE PAGE)

A-a 4/6

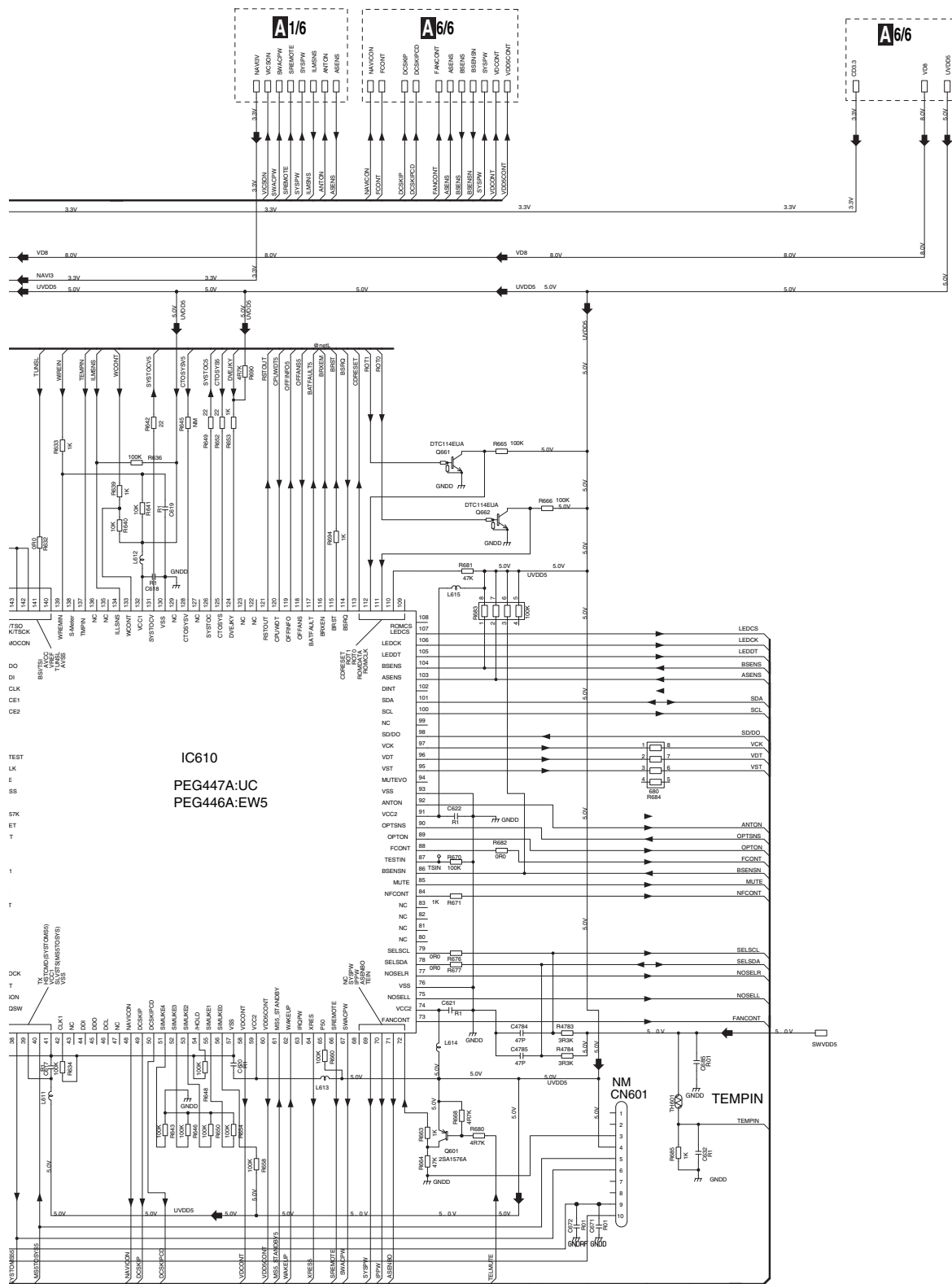


A4/6

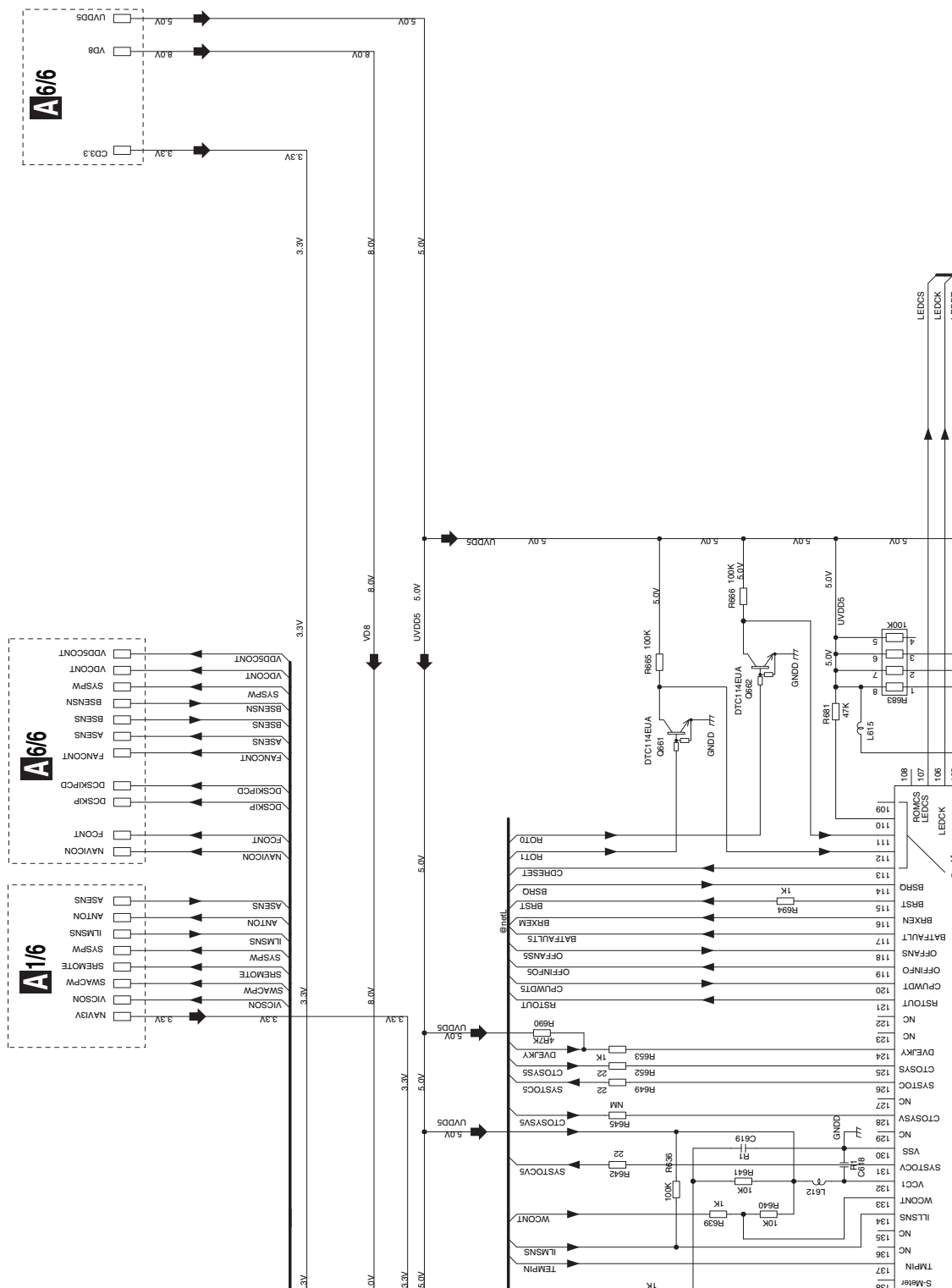
AVIC-F700BT/XS/UC

**A-b 4/6**

#### A4/6 AV UNIT(SYSTEM uCOM SECTION)



AVIC-F700BT/XS/UC







**A-b 4/6**

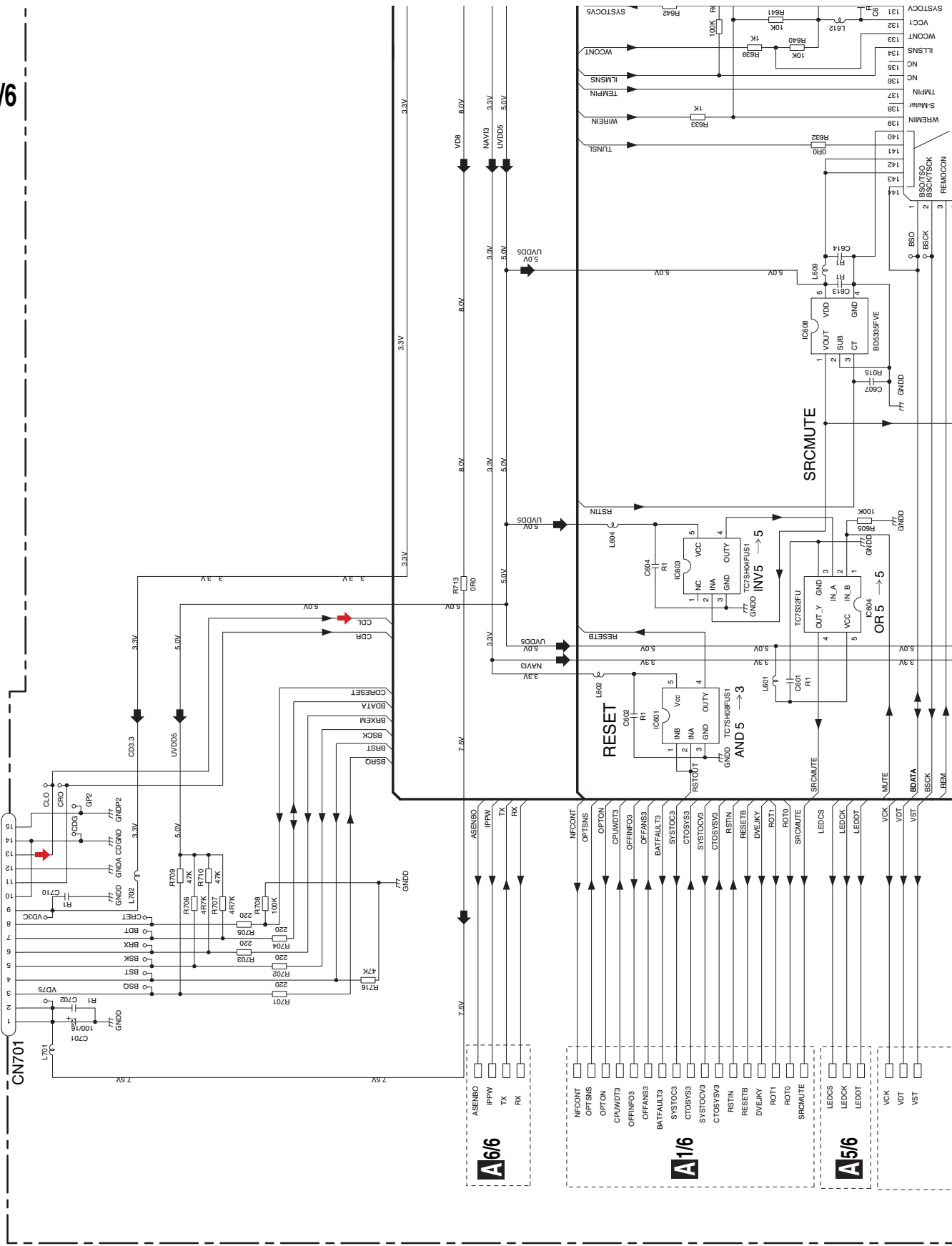
A-b 4/6

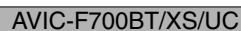
A-a A-b

C CN701

A-a 4/6

AVIC-F700BT/XS/UC

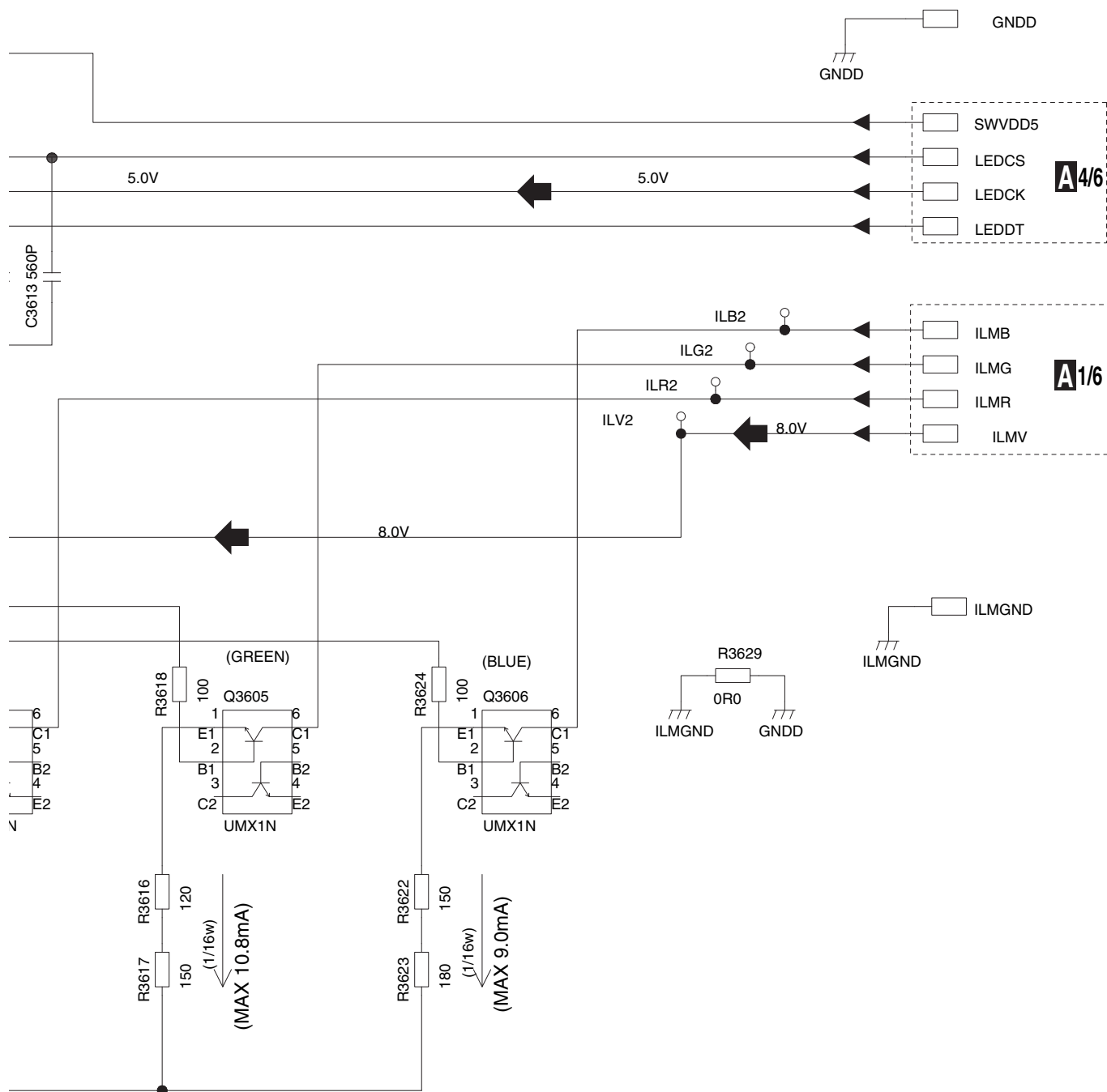




## 4



# A5/6 AV UNIT(RGB LED DRIVER SECTION)

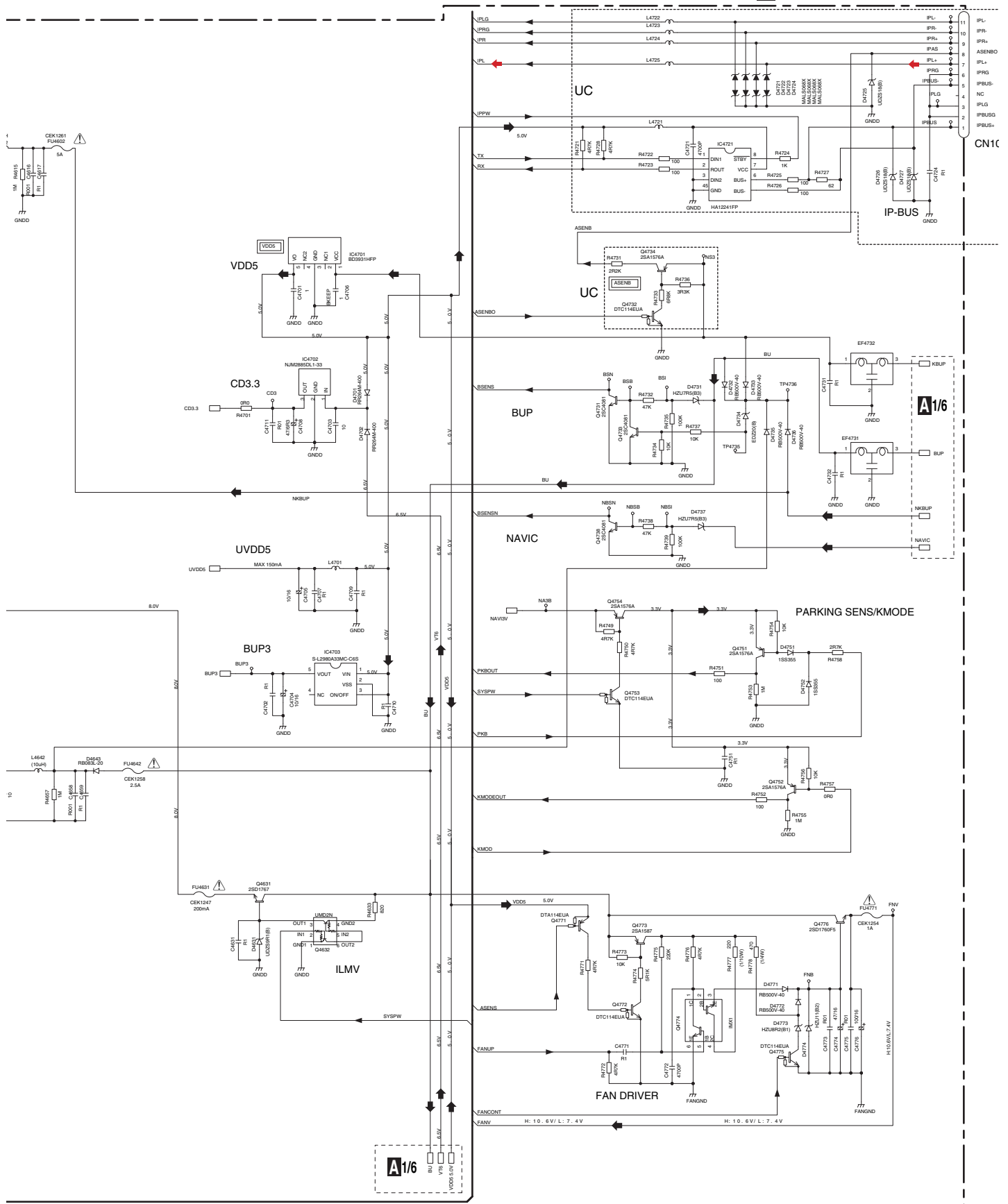


## A-a 6/6



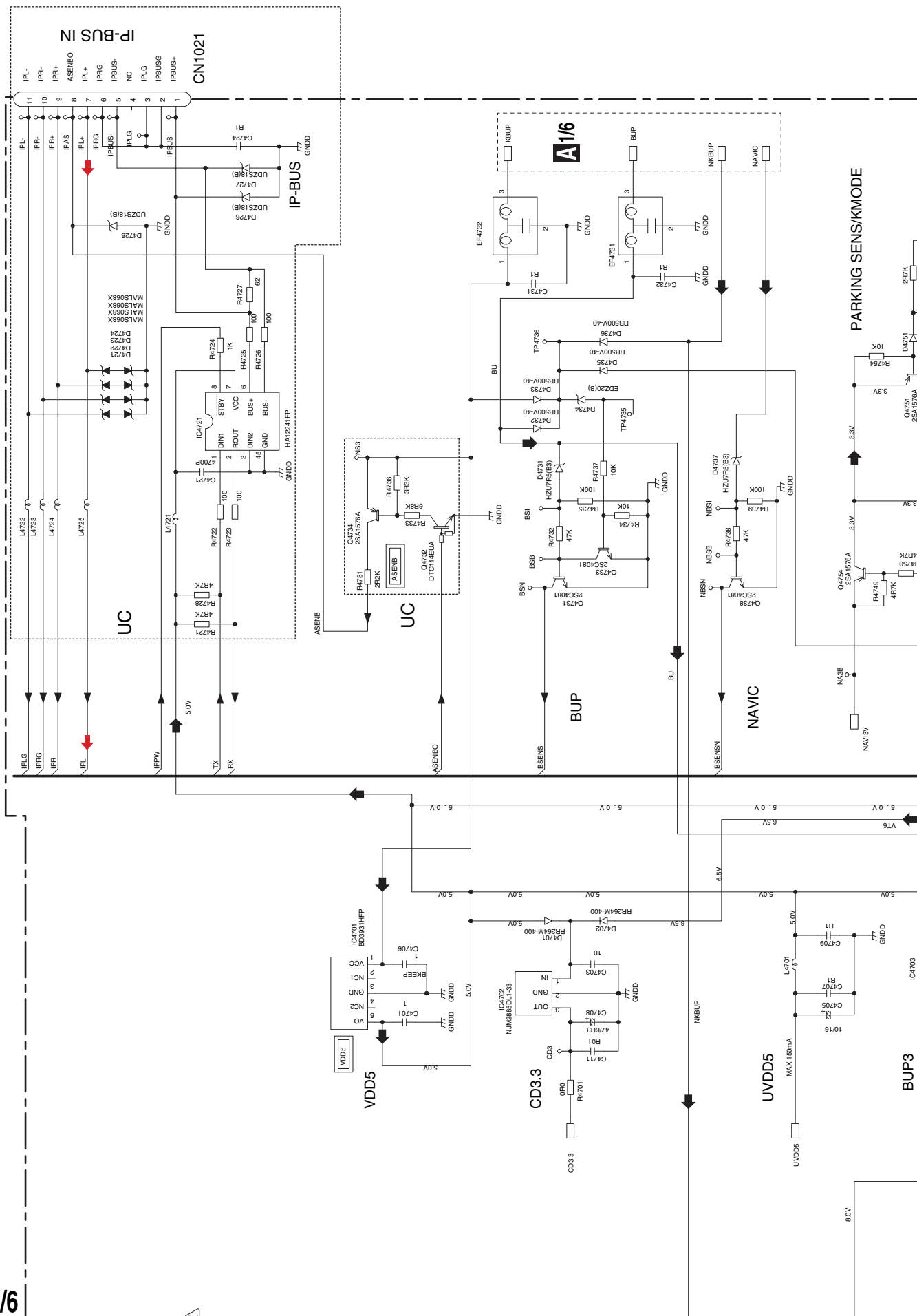
A-b 6/6

A/6 AV UNIT(IF SECTION)



**A 6/6** AV UNIT(IF SECTION)

A-a	A-b











A

**F**

C

A-a	A-b
-----	-----

□

E

F

AVIC-F700BT/XS/UC

# 10.7 KEYBOARD UNIT

A

B

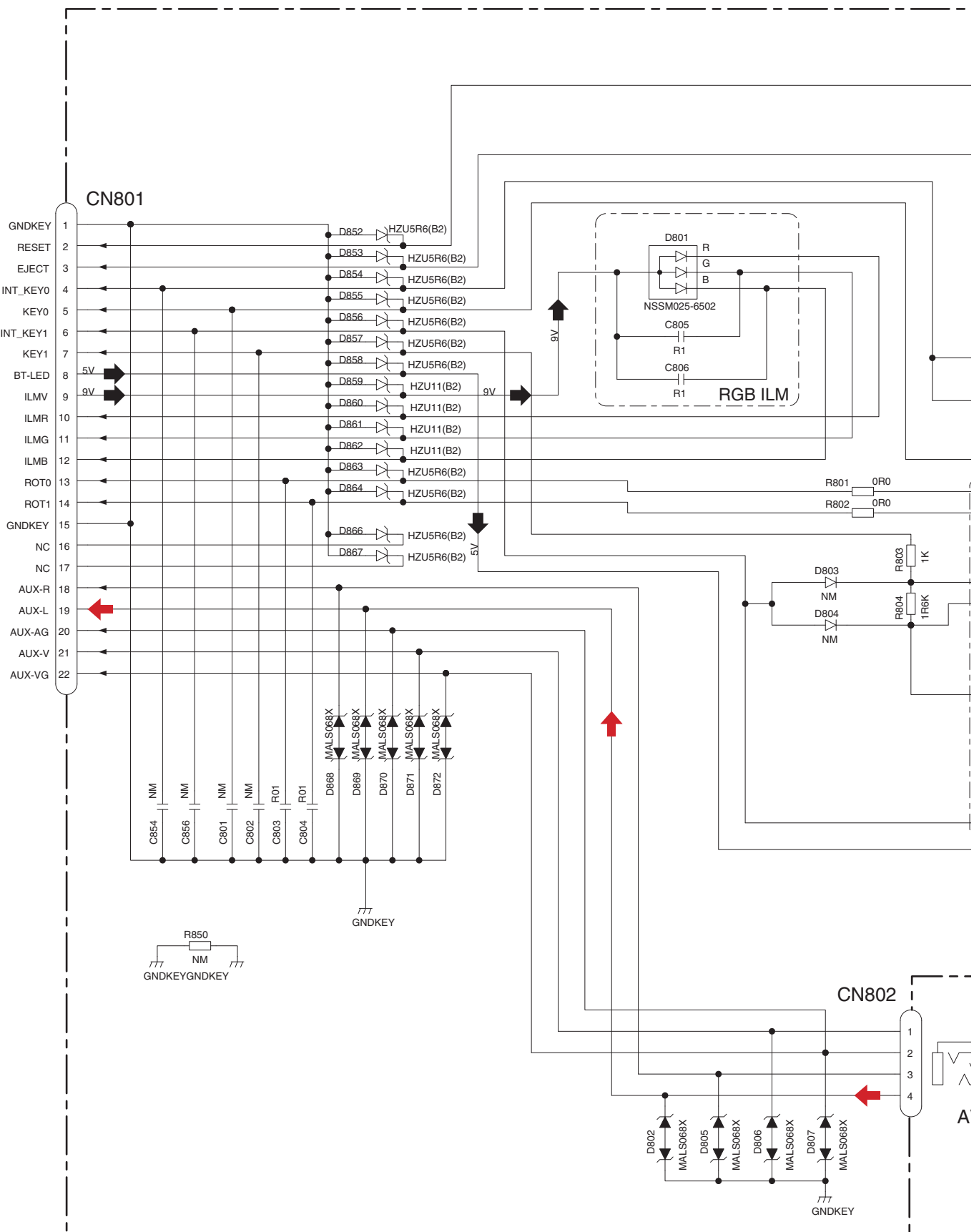
C

D

E

F

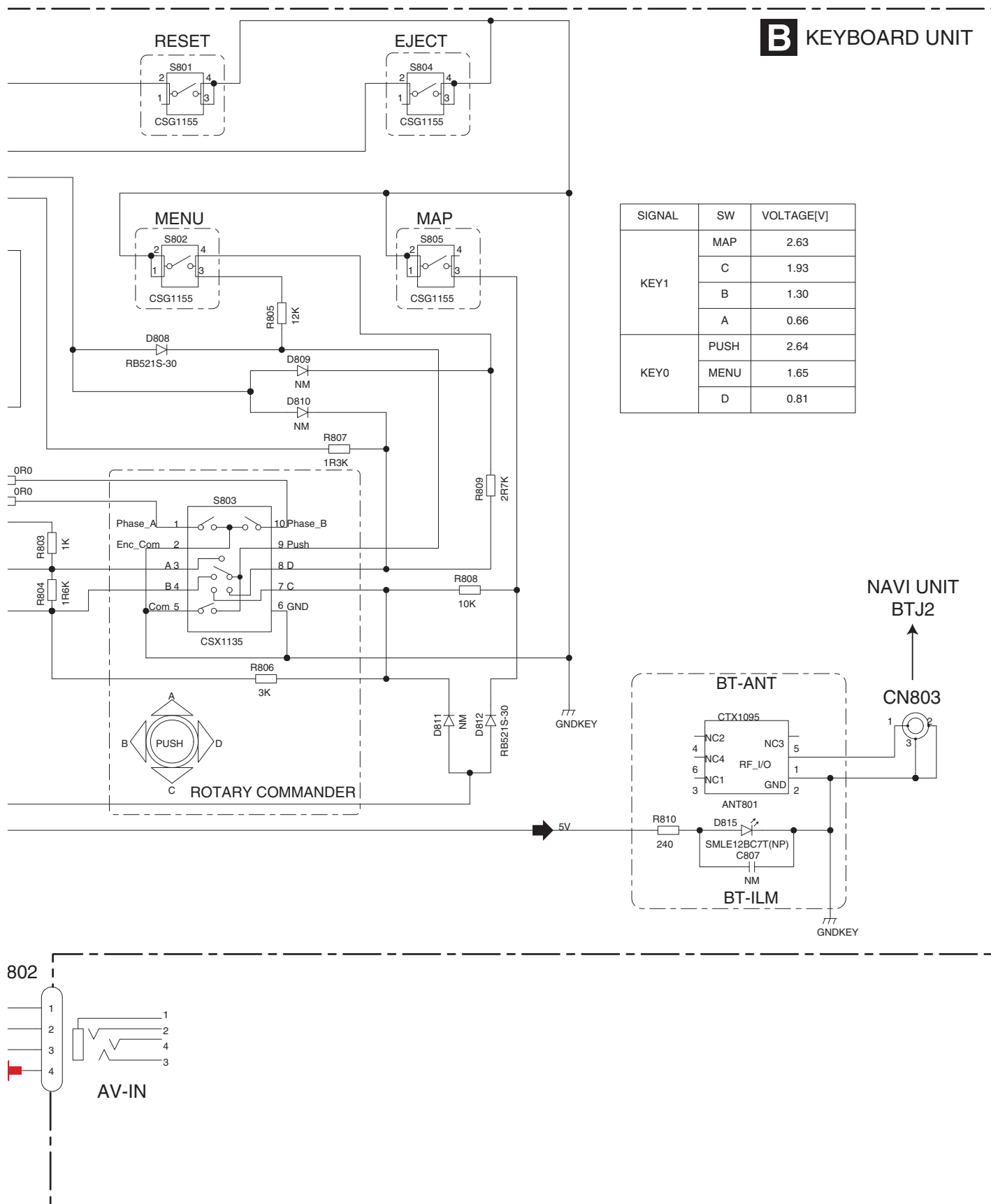
PANEL UNIT  
OTJ2



A

**B**

AVIC-F700BT/XS/UC



## 4

A



C

D

E

F

1

2

3

4

A

**P**

C

D

E

F



C-a C-b

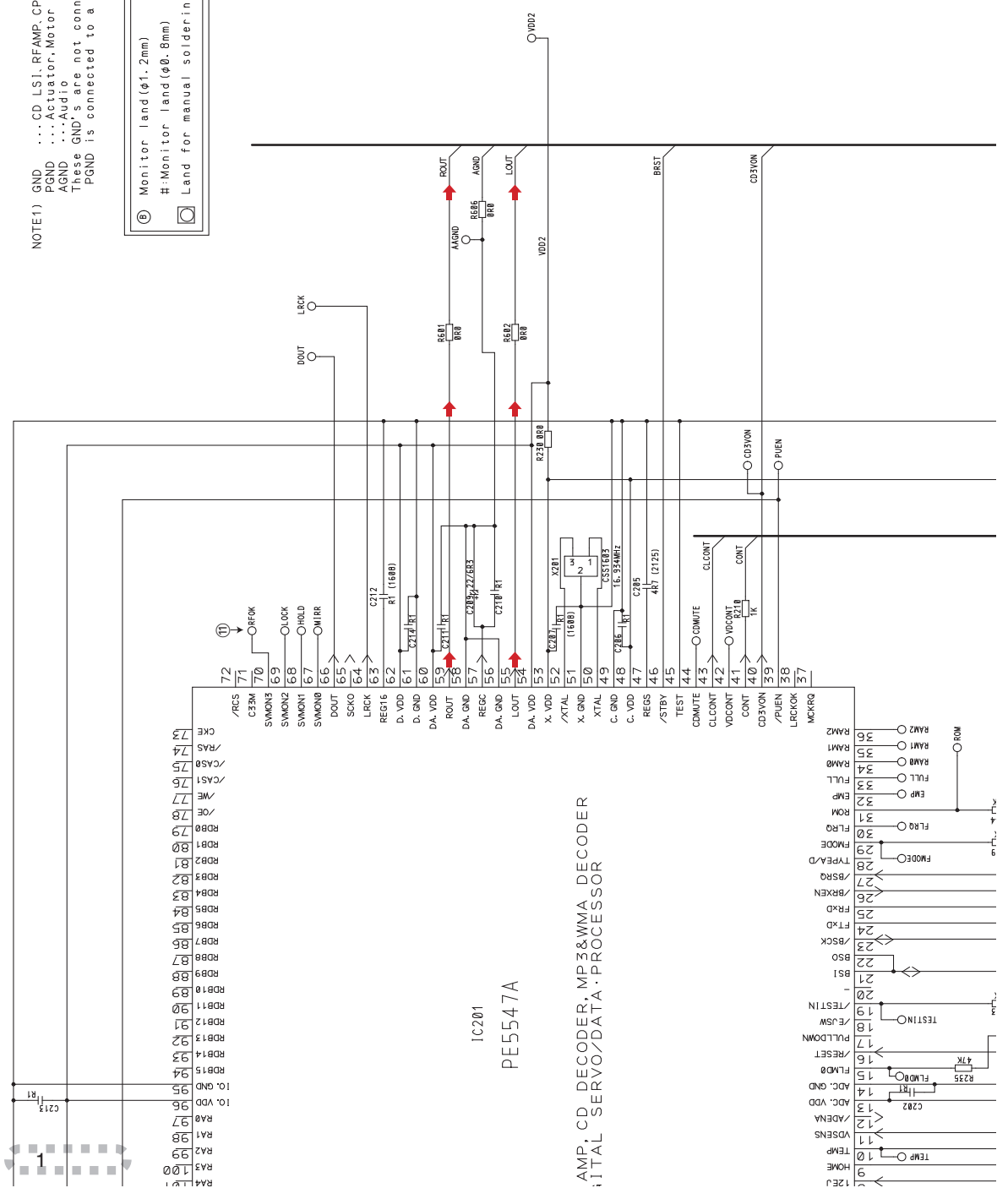
C-b

# CD CORE UNIT(S10.5COMP2)

NOTE1) GND ...CD LSI, RFAMP, CPU  
PGND ...Actuator, Motor Driver  
AGND ...Audio  
These GND's are not connected to each other on PCB.  
PGND is connected to a floating mechanism part by a screw.

- ⑤ Monitor land (φ1.2mm)
- #: Monitor land (φ0.8mm)
- Land for manual soldering

↑ SIGNAL LINE  
↑ FOCUS SERVO LINE  
↑ TRACKING SERVO LINE  
↑ CARRIAGE SERVO LINE  
↑ SPINDLE SERVO LINE



AVIC-F700BT/XS/UC





A

C-b

B

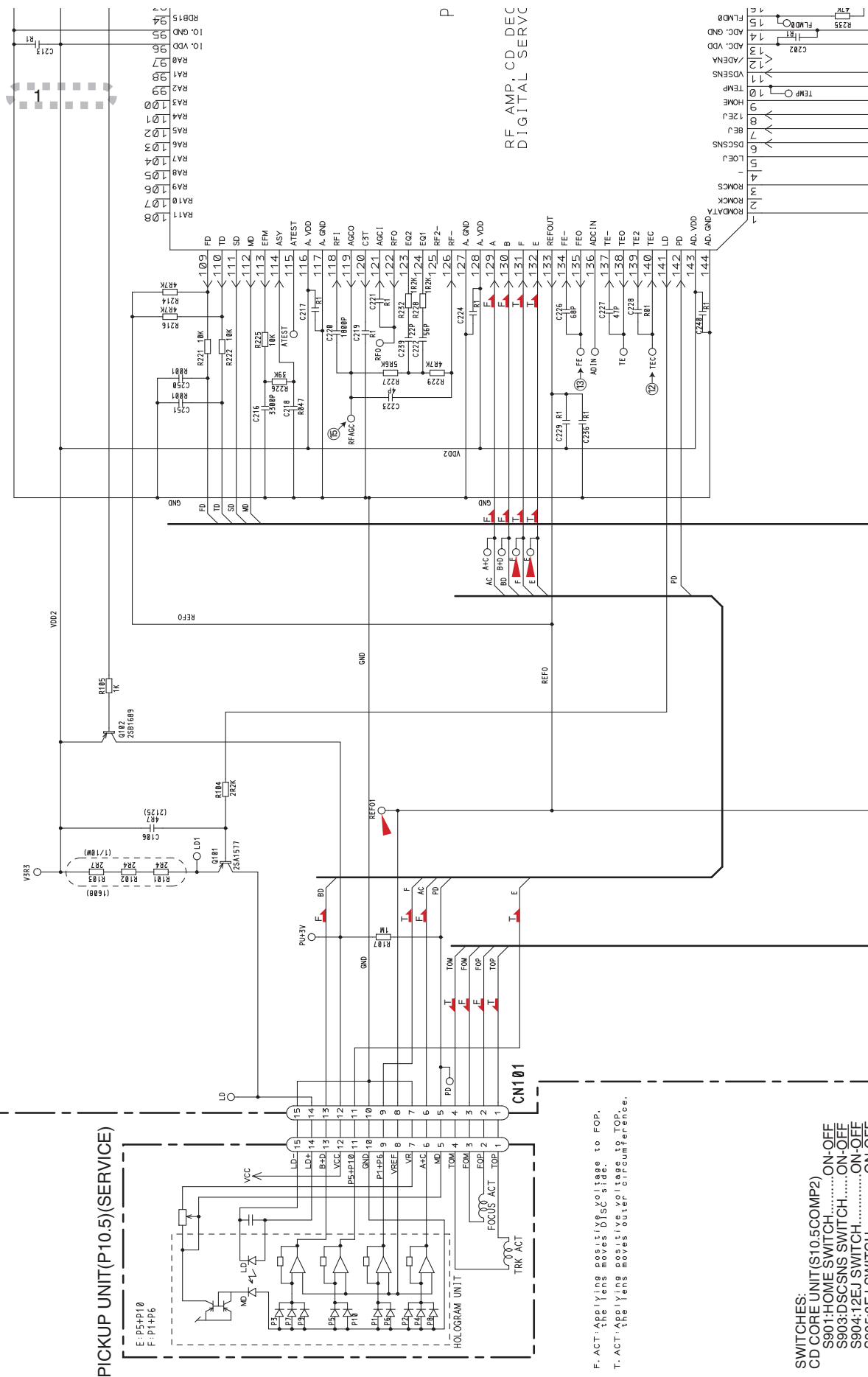
C

D

E

F

C-a

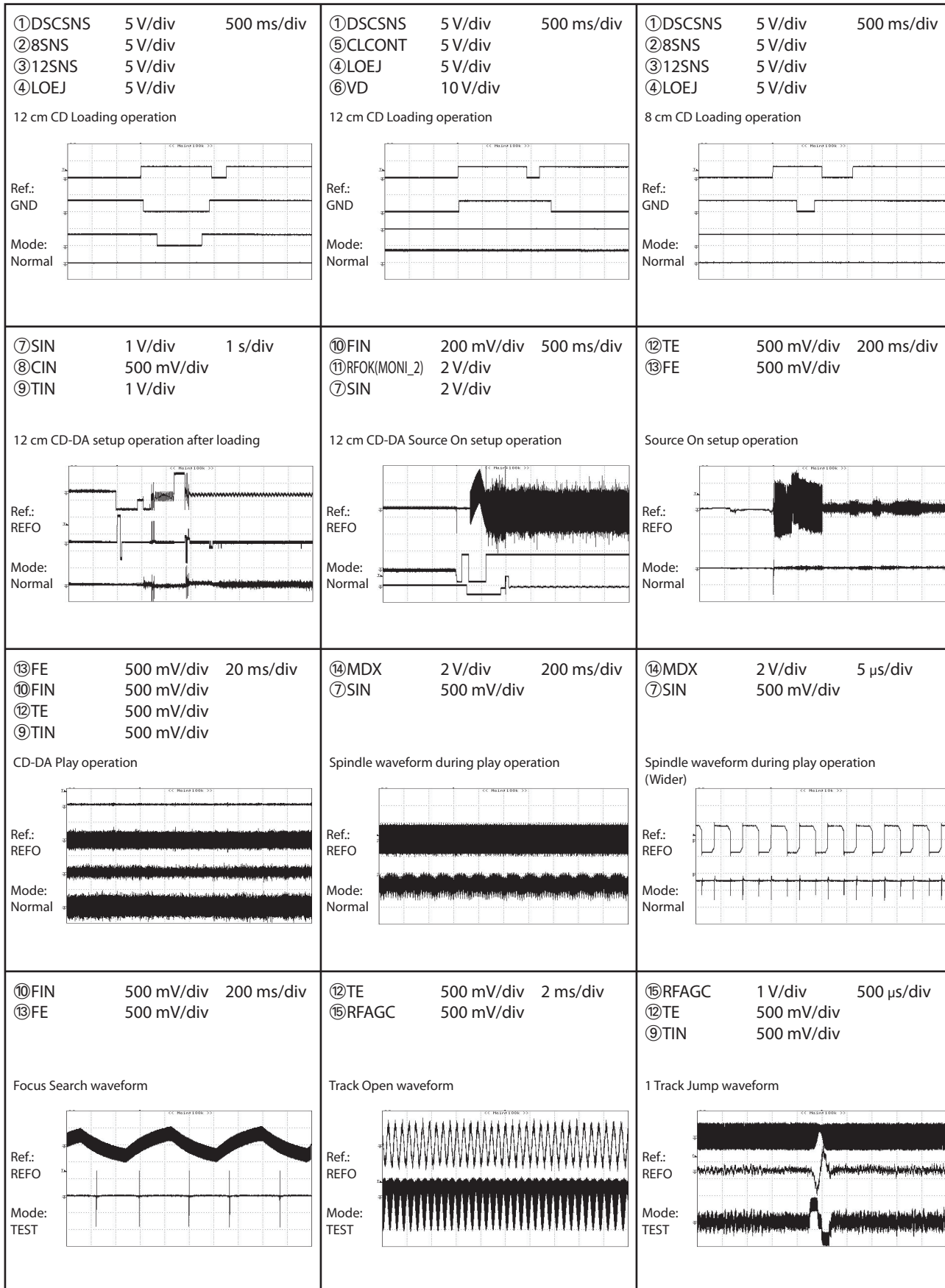


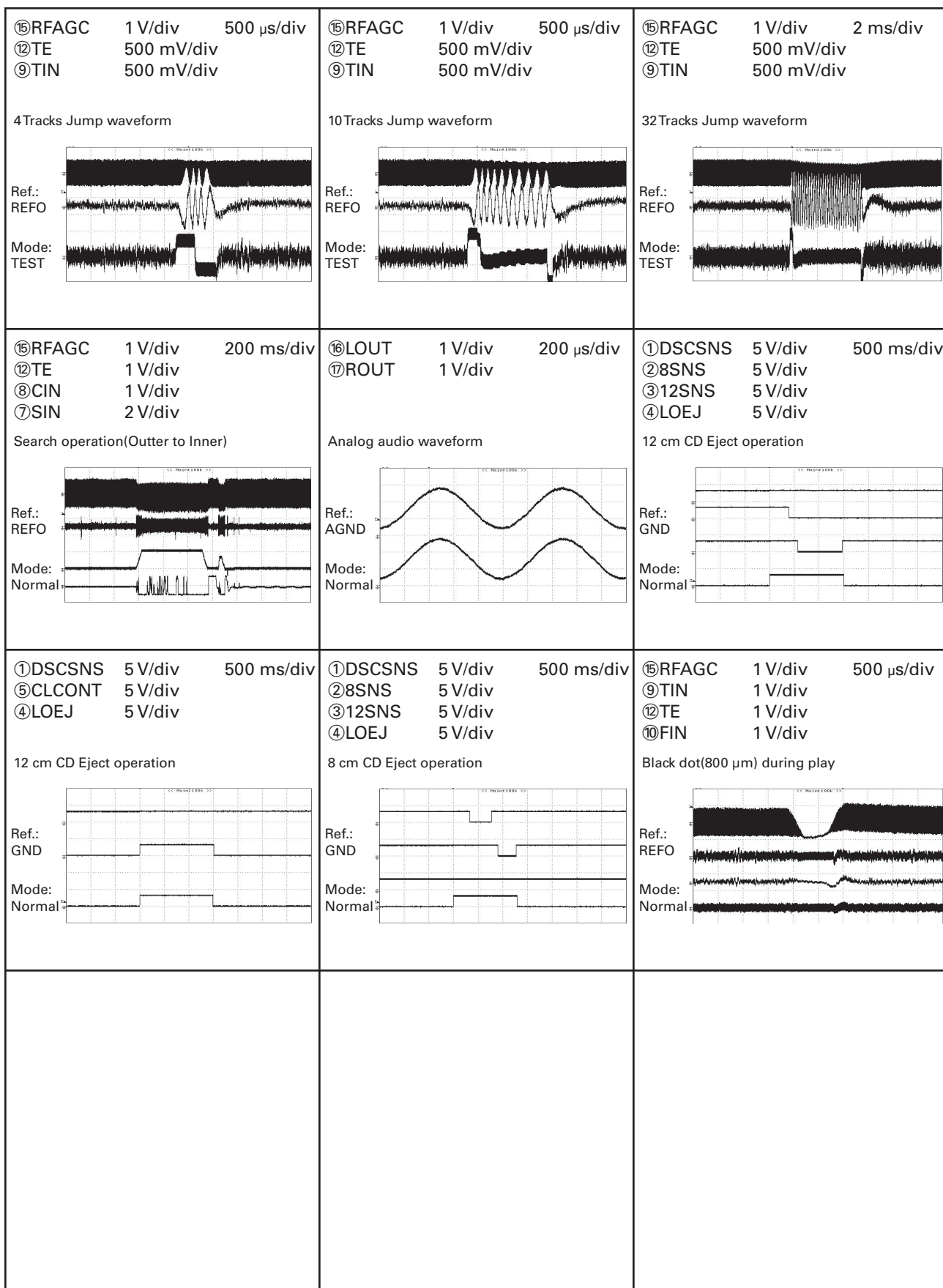


# 10.9 WAVEFORMS

## CD CORE UNIT

Note : 1. The encircled numbers denote measuring points in the circuit diagram.  
2. Reference voltage REFO1(1.65 V)





## 11.1 AV UNIT





## 2.Viewpoint of PCB diagrams

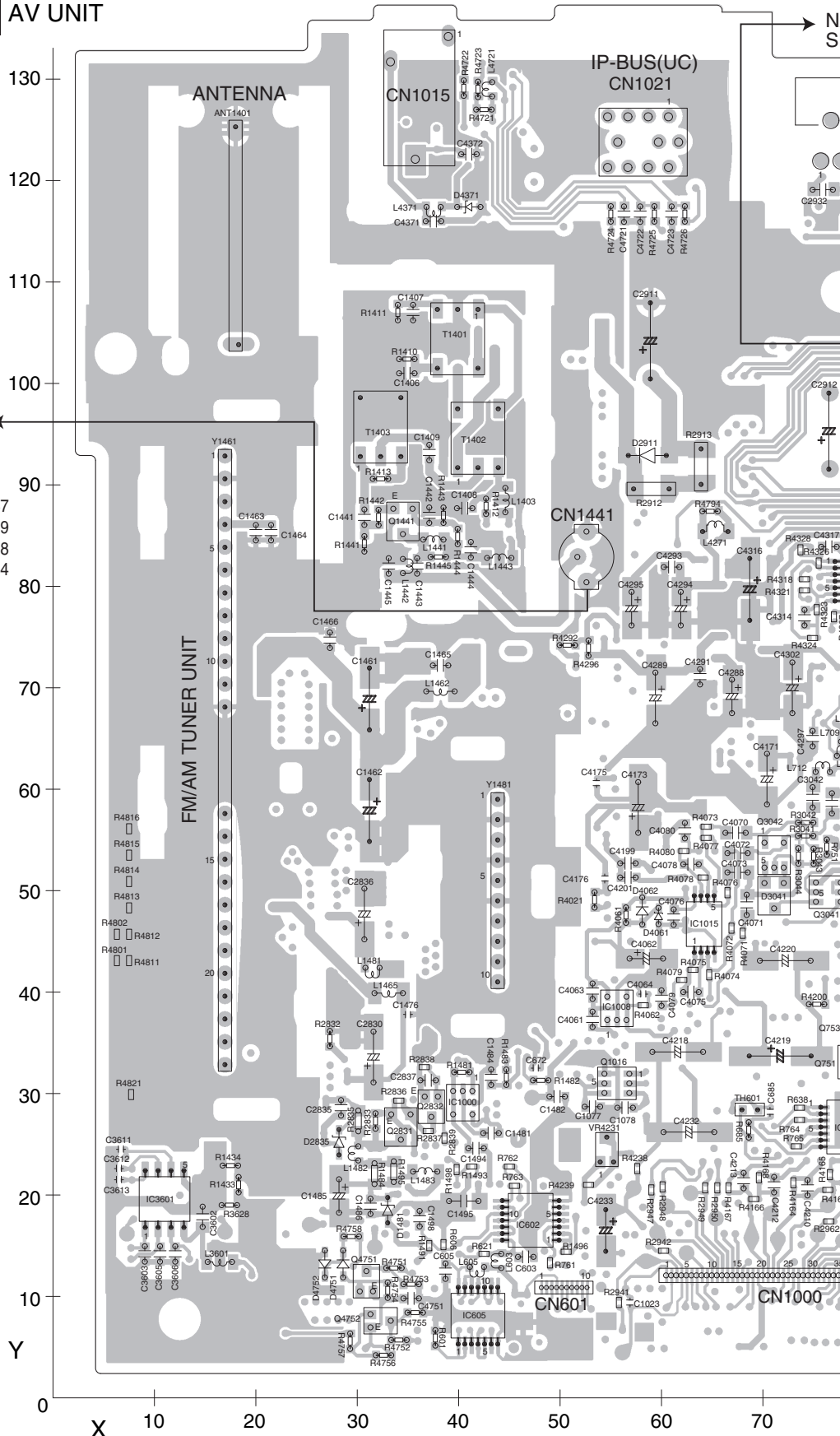
A diagram of a P.C. board with various components labeled. On the left, a 'Connector' is shown. In the center, a 'Chip Part' is mounted. The board is oriented with 'SIDE A' on the top and 'SIDE B' on the bottom, as indicated by labels on the right. The entire board is labeled 'P.C. Board' at the bottom left.

**A** AV UNIT

## WIRED REMOTE

NAVI UNIT  
TMJ1

	FU 4631 (A,114,85) Fuse 200 mA	CEK1247
	FU 4641 (A,141,8) Fuse 3.15 A	CEK1259
	FU 4661 (A,136,8) Fuse 2.5 A	CEK1258
	FU 4771 (A,115,106) Fuse 1 A	CEK1254

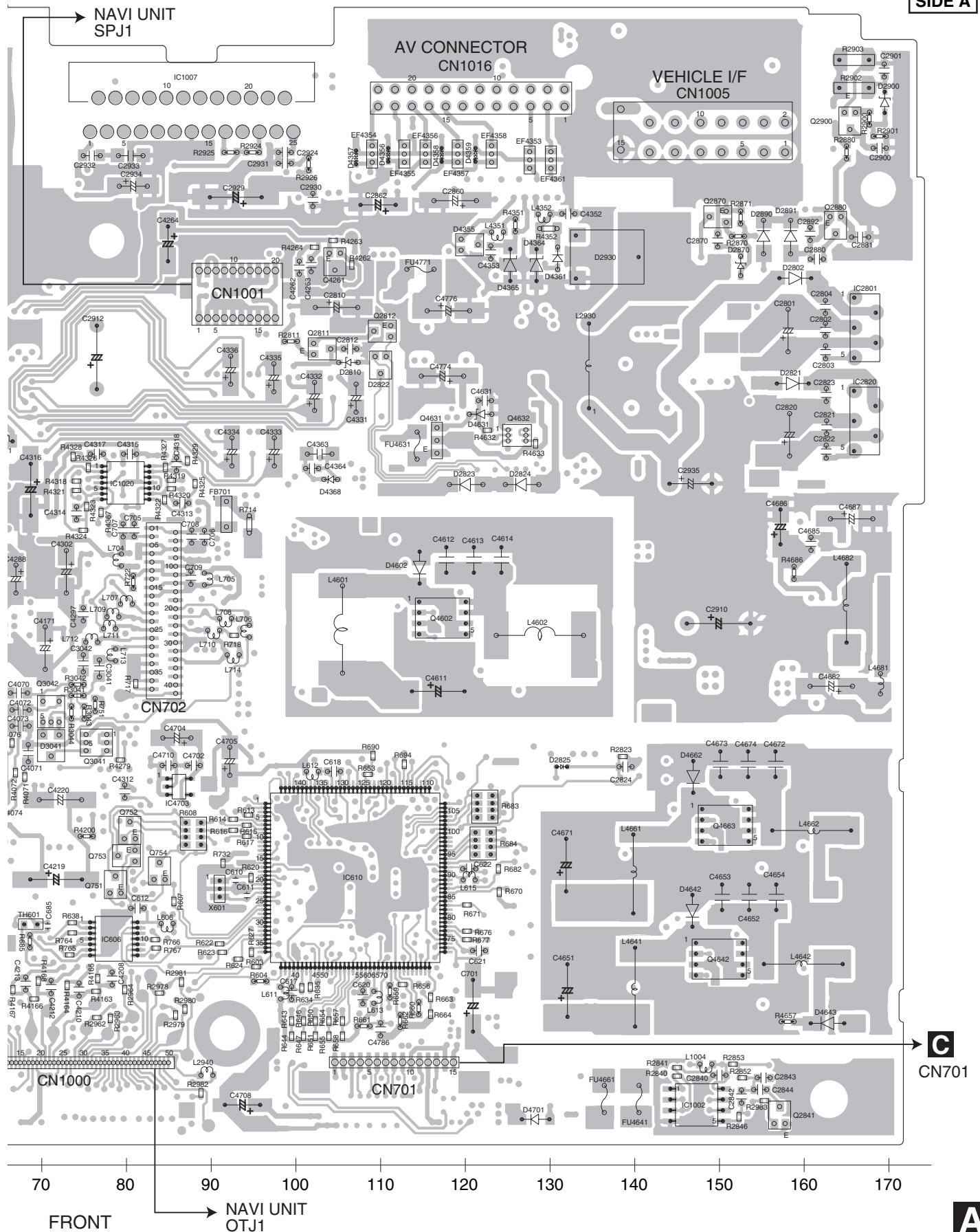


FRONT

AVIC-F700BT/XS/UC

130

SIDE A



AVIC-F700BT/XS/UC



A

# AV UNIT

- |                                   |                 |
|-----------------------------------|-----------------|
| ⚠ FU 2900 (B,71,7) Fuse 250 mA    | CEK1276         |
| ⚠ FU 4351 (B,116,117) Fuse 40 A   | MINISMDC075F/24 |
| ⚠ FU 4352 (B,128,133) Fuse 3.15 A | CEK1259         |
| ⚠ FU 4601 (B,103,60) Fuse 5 A     | CEK1261         |
| ⚠ FU 4602 (B,143,58) Fuse 5 A     | CEK1261         |
| ⚠ FU 4642 (B,157,71) Fuse 2.5 A   | CEK1258         |
| ⚠ FU 4662 (B,147,55) Fuse 2.5 A   | CEK1258         |

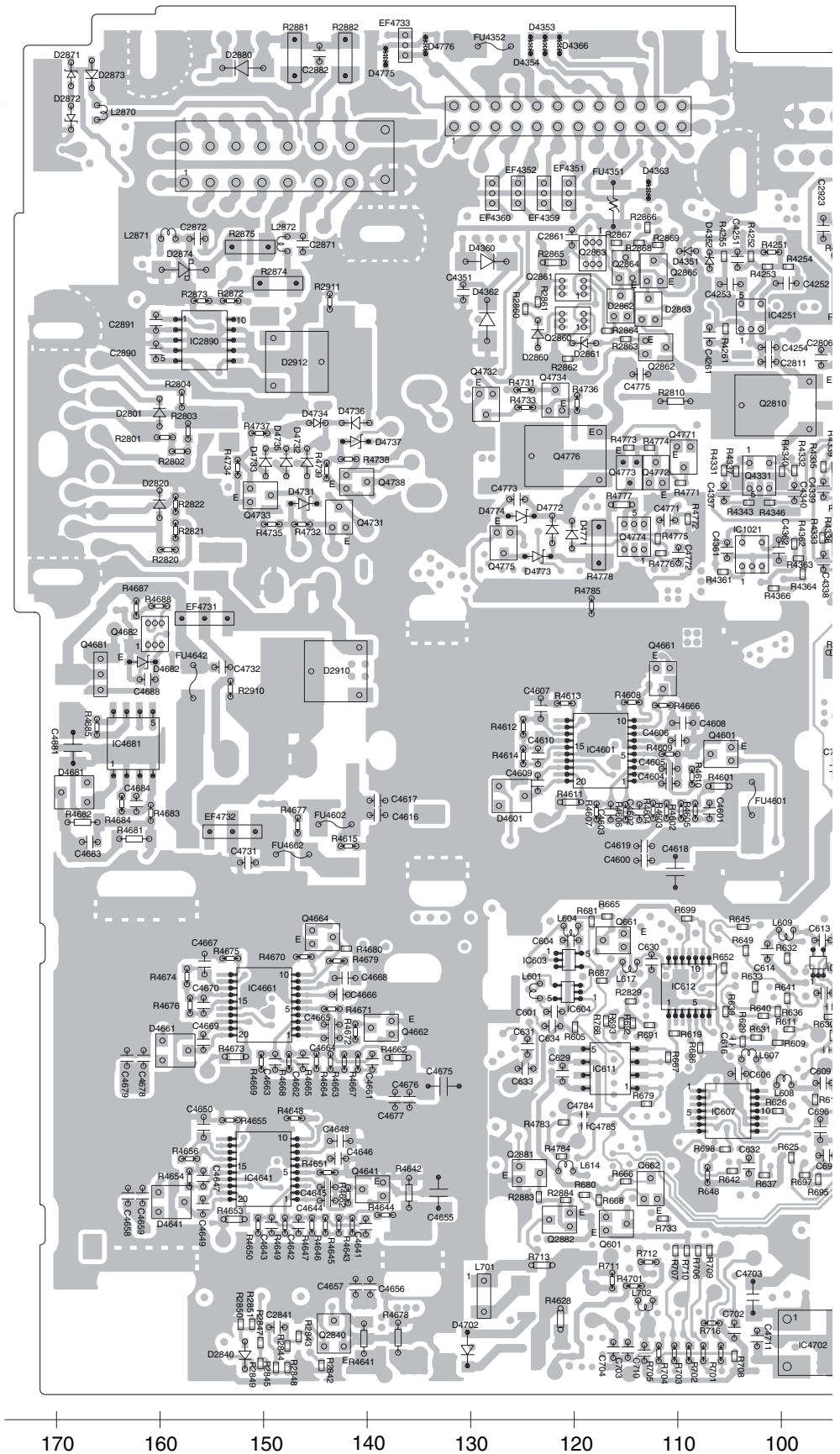
B

C

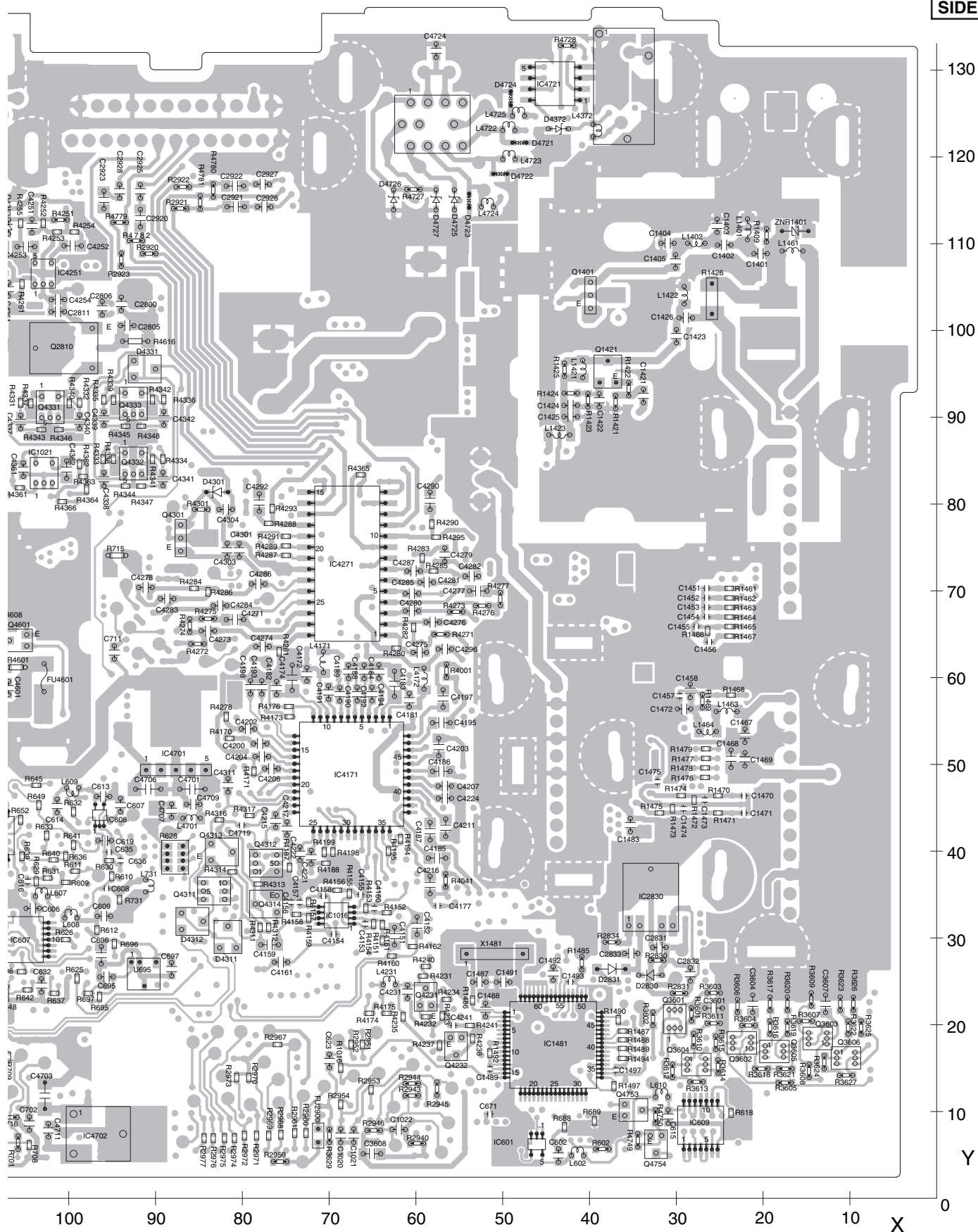
D

E

F



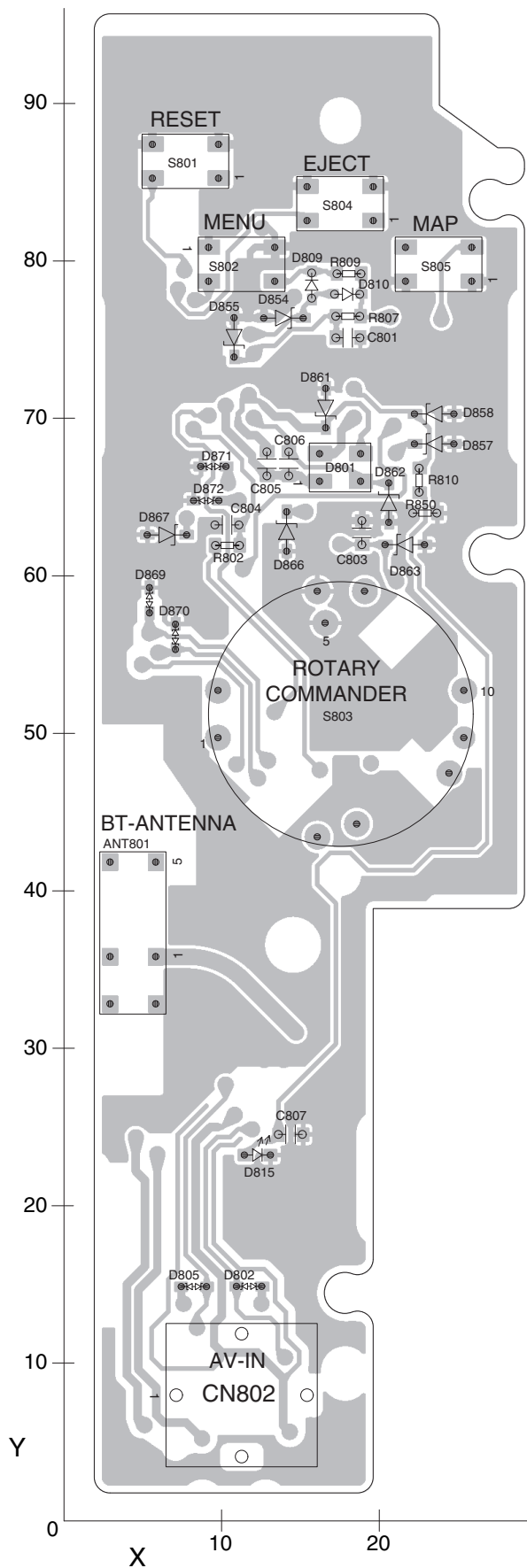




# 11.2 KEYBOARD UNIT

## B KEYBOARD UNIT

SIDE A

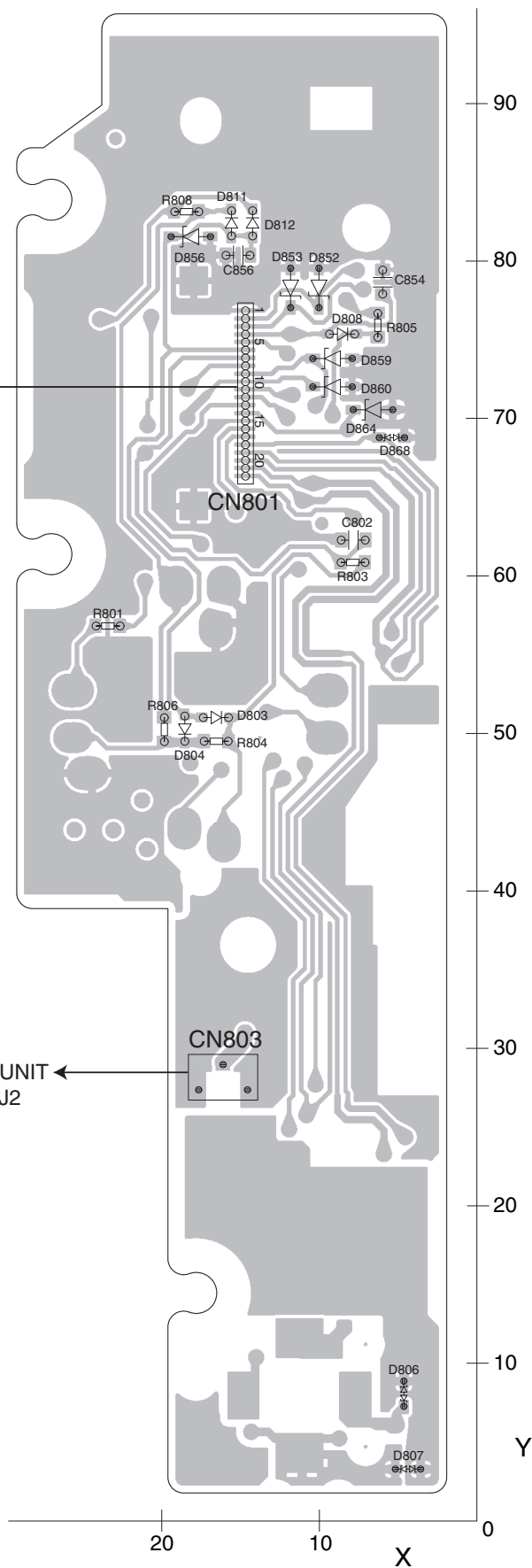


# B KEYBOARD UNIT

SIDE B

PANEL UNIT  
OTJ2

NAVI UNIT  
BTJ2



# 11.3 CD CORE UNIT(S10.5COMP2)

**C** CD CORE UNIT(S10.5COMP2)

**SIDE A**

**A** CN701

PICKUP UNIT(P10.5)(SERVICE)

CN701

CN101

CN702  
1 2 3 4 5 6

M2  
LOADING  
/CARRIAGE  
MOTOR

M1  
SPINDLE  
MOTOR



## 12. ELECTRICAL PARTS LIST

### NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

#### Chip Resistor

RS1/○○○○○J,RS1/○○○○○J

#### Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

- The  $\triangle$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Meaning of the figures and others in the parentheses in the parts list.

Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

IC 301 (A, 91, 111) IC NJM2068V

- The expression of the unit in this manual is shown by u instead of  $\mu$ . Please do not make a mistake.

#### Circuit Symbol and No.      Part No.

**Unit Number: CWN3170(UC)**

**Unit Number: CWN3168(EW5)**

**Unit Name : AV Unit**

**Unit Number:**

**Unit Name : Keyboard Unit**

**Unit Number: CWX3514**

**Unit Name : CD Core Unit(S10.5COMP2)**

**A**

**Unit Number: CWN3170(UC)**

**Unit Number: CWN3168(EW5)**

**Unit Name : AV Unit**

#### MISCELLANEOUS

IC 601 (B,46,6) IC TC7SH08FUS1  
 IC 603 (B,121,44) IC TC7SH04FUS1  
 IC 604 (B,121,41) IC TC7S32FU  
 IC 605 (A,42,8) IC TC74VHCT08AFTS1  
 IC 608 (B,97,44) IC BD5335FVE

IC 609 (B,27,8) IC TC74VHC08FTS1  
 IC 610 (A,107,34) IC(UC) PEG447A  
 (A,107,34) IC(EW5) PEG446A  
 IC 1007 (A,88,128) IC PAL007C  
 IC 1008 (A,56,38) IC NJM2125F

IC 1016 (B,69,33) IC BA4558RFVM  
 IC 2801 (A,168,99) IC BA00CC0WCP-V5  
 IC 2820 (A,168,88) IC BA00CC0WCP-V5  
 IC 2830 (B,33,36) IC BA00BC0WFP  
 IC 2890 (B,156,104) IC TPD1018F

IC 3601 (A,11,20) IC M62343FP  
 IC 4171 (B,67,49) IC AN15887A  
 IC 4251 (B,103,107) IC NJM2505AF  
 IC 4271 (B,68,73) IC PML018A  
 IC 4601 (B,118,65) IC TPS5103IDB

#### Circuit Symbol and No.      Part No.

IC 4641 (B,150,24) IC TPS5103IDB  
 IC 4701 (B,88,55) IC BD3931HFP  
 IC 4702 (B,95,7) IC NJM2885DL1-33  
 IC 4703 (A,86,45) IC S-L2980A33MC-C6S  
 IC 4721 (B,44,129) IC(UC) HA12241FP

Q 601 (B,116,19) Chip Transistor 2SA1576A  
 Q 661 (B,116,46) Chip Transistor DTC114EUA  
 Q 662 (B,113,22) Chip Transistor DTC114EUA  
 Q 751 (A,79,33) Chip Transistor(EW5) DTC124EUA  
 Q 752 (A,80,40) Chip Transistor(EW5) DTC124EUA

Q 753 (A,80,37) Chip Transistor(EW5) DTC124EUA  
 Q 754 (A,84,35) Chip Transistor(EW5) DTC124EUA  
 Q 1016 (A,56,31) Transistor IMD2A  
 Q 1401 (B,38,104) Transistor(EW5) 2SC3357  
 Q 1421 (B,38,95) Transistor(EW5) 2SC3127

Q 1441 (A,35,86) Transistor(EW5) 2SC3130  
 Q 2810 (B,102,98) Transistor 2SD1760F5  
 Q 2811 (A,103,96) Chip Transistor DTA114EUA  
 Q 2812 (A,110,98) Chip Transistor DTC114EUA  
 Q 2860 (B,120,106) Transistor UMD2N

Q 2861 (B,120,109) Transistor UMD2N  
 Q 2862 (B,112,104) Transistor 2SC4081  
 Q 2863 (B,118,113) Transistor UMD2N  
 Q 2864 (B,115,111) Chip Transistor DTC114EUA  
 Q 2865 (B,112,111) Chip Transistor DTC124EUA

Q 2870 (A,150,112) Transistor 2SC4116  
 Q 2880 (A,164,111) Chip Transistor DTC114EUA  
 Q 2881 (B,124,24) Chip Transistor DTC114EUA  
 Q 2882 (B,122,19) Chip Transistor 2SA1576A  
 Q 2900 (A,165,123) Transistor 2SC4116

Q 3601 (B,30,21) Transistor UMX1N  
 Q 3602 (B,22,18) Transistor UMX1N  
 Q 3603 (B,14,18) Transistor UMX1N  
 Q 3604 (B,28,15) Transistor UMX1N  
 Q 3605 (B,19,17) Transistor UMX1N

Q 3606 (B,10,16) Transistor UMX1N  
 Q 4231 (B,59,23) Transistor 2SC4081  
 Q 4232 (B,55,18) Chip Transistor 2SA1576A  
 Q 4312 (B,77,39) Transistor IMD3A  
 Q 4314 (B,77,34) Transistor DTC323TK

5		6		7		8	
<u>Circuit Symbol and No.</u>		<u>Part No.</u>		<u>Circuit Symbol and No.</u>		<u>Part No.</u>	
Q 4331	(B,102,91) Transistor(UC)	FMG12		D 4360	(B,129,112) Diode	1SR154-400	
Q 4332	(B,93,85) Transistor	FMG12		D 4361	(A,131,107) Diode	1SS355	
Q 4333	(B,93,92) Transistor(UC)	FMG12		D 4362	(B,129,106) Diode	1SR154-400	
Q 4601	(B,106,64) Chip Transistor	DTC114EUA		D 4363	(B,113,119) Diode	MALS068X	A
Q 4602	(A,117,65) FET	SP8K2		D 4364	(A,128,106) Diode	PTZ27(B)	
Q 4631	(A,119,86) Transistor	2SD1767		D 4365	(A,125,106) Diode	PTZ27(B)	
Q 4632	(A,126,86) Transistor	UMD2N		D 4366	(B,122,133) Diode	MALS068X	
Q 4641	(B,140,22) Chip Transistor	DTC114EUA		D 4371	(A,41,117) Diode	UDZS5R6(B)	
Q 4642	(A,150,24) FET	SP8K2		D 4372	(B,44,123) Diode	UDZS5R6(B)	
Q 4661	(B,112,72) Chip Transistor	DTC114EUA		D 4601	(B,126,60) Diode	RB400D	
Q 4731	(B,143,87) Transistor	2SC4081		D 4602	(A,115,71) Diode	RB060L-40	
Q 4732	(B,129,98) Chip Transistor(UC)	DTC114EUA		D 4631	(A,122,89) Diode	UDZS9R1(B)	
Q 4733	(B,150,89) Transistor	2SC4081		D 4641	(B,159,21) Diode	RB400D	
Q 4734	(B,122,99) Chip Transistor(UC)	2SA1576A		D 4642	(A,147,30) Diode	RB060L-40	
Q 4738	(B,141,91) Transistor	2SC4081		D 4643	(A,163,17) Diode	RB083L-20	B
Q 4751	(A,31,12) Chip Transistor	2SA1576A		D 4701	(A,128,5) Diode	RR264M-400	
Q 4752	(A,32,8) Chip Transistor	2SA1576A		D 4702	(B,130,7) Diode	RR264M-400	
Q 4753	(B,35,10) Chip Transistor	DTC114EUA		D 4721	(B,48,122) Diode(UC)	MALS068X	
Q 4754	(B,32,6) Chip Transistor	2SA1576A		D 4722	(B,50,118) Diode(UC)	MALS068X	
Q 4771	(B,110,93) Chip Transistor	DTA114EUA		D 4723	(B,54,115) Diode(UC)	MALS068X	
Q 4772	(B,112,92) Chip Transistor	DTC114EUA		D 4724	(B,49,127) Diode(UC)	MALS068X	
Q 4773	(B,115,92) Transistor	2SA1587		D 4725	(B,56,115) Diode(UC)	UDZS18(B)	
Q 4774	(B,114,85) Transistor	IMX1		D 4726	(B,63,115) Diode(UC)	UDZS18(B)	
Q 4775	(B,127,85) Chip Transistor	DTC114EUA		D 4727	(B,58,115) Diode(UC)	UDZS18(B)	
Q 4776	(B,122,93) Transistor	2SD1760F5		D 4731	(B,146,89) Diode	HZU7R5(B3)	C
D 2802	(A,159,105) Diode	RB060L-40		D 4732	(B,146,93) Diode	RB500V-40	
D 2810	(A,106,95) Diode	UDZS5R6(B)		D 4733	(B,150,93) Diode	RB500V-40	
D 2821	(A,159,92) Diode	RB060L-40		D 4734	(B,145,96) Diode	EDZ20(B)	
D 2822	(A,110,94) Diode	DAN202U		D 4735	(B,148,93) Diode	RB500V-40	
D 2823	(A,120,80) Diode	1SR154-400		D 4736	(B,141,96) Diode	RB500V-40	
D 2824	(A,127,80) Diode	1SR154-400		D 4737	(B,141,95) Diode	HZU7R5(B3)	
D 2825	(A,131,47) Diode	1SS400G		D 4751	(A,29,13) Diode	1SS355	
D 2831	(B,38,26) Diode	RR264M-400		D 4752	(A,27,13) Diode	1SS355	
D 2860	(B,124,105) Diode	MA111		D 4771	(B,120,86) Diode	RB500V-40	
D 2861	(B,119,104) Diode	UDZS8R2(B)		D 4772	(B,122,86) Diode	RB500V-40	
D 2862	(B,116,108) Diode	DAN202U		D 4773	(B,124,83) Diode	HZU8R2(B1)	D
D 2863	(B,113,107) Diode	DAN202U		D 4774	(B,125,87) Diode	HZU11(B2)	
D 2870	(A,153,106) Diode	UDZS5R1(B)		ZNR1401	(B,16,112) Surge Protector	CSA30-201N	
D 2874	(B,158,111) Diode	PTZ18A		L 601	(B,123,41) Inductor	CTF1410	
D 2880	(B,152,131) Diode	1SR154-400		L 602	(B,41,5) Inductor	CTF1410	
D 2890	(A,155,110) Diode	1SR154-400		L 604	(B,120,48) Inductor	CTF1410	
D 2891	(A,158,110) Diode	1SR154-400		L 605	(A,42,13) Inductor	CTF1410	
D 2900	(A,170,125) Diode	HZU8R2(B1)		L 608	(B,100,32) Inductor	CTF1410	
D 2910	(B,146,72) Diode	KS926S2		L 609	(B,100,47) Inductor	CTF1410	
D 2911	(A,59,93) Diode	RB060L-40		L 610	(B,32,12) Inductor	CTF1410	
D 2912	(B,145,102) Diode	KS926S2		L 611	(A,98,20) Inductor	CTF1410	
D 2930	(A,140,107) Diode	ST70-27F		L 612	(A,102,46) Inductor	CTF1410	E
D 4061	(A,60,48) Diode	EDZ4R3(B)		L 613	(A,109,20) Inductor	CTF1410	
D 4062	(A,58,48) Diode	1SS355		L 614	(B,121,24) Inductor	CTF1410	
D 4311	(B,82,30) Diode	DAN202K		L 615	(A,120,34) Inductor	CTF1410	
D 4312	(B,86,32) Diode	DAN202K		L 701	(B,129,12) Inductor	CTF1453	
D 4331	(B,91,96) Diode	DAP202K		L 702	(B,113,12) Inductor	CTF1410	
D 4351	(B,109,113) Diode	EDZ20(B)		L 1401	(B,22,112) Inductor(EW5)	LCTAWR12J2520	
D 4352	(B,107,112) Diode	EDZ6R8(B)		L 1402	(B,28,110) Inductor(EW5)	LCYCR10K2125	
D 4353	(B,123,133) Diode	MALS068X		L 1403	(A,45,89) Inductor(EW5)	LCTAW101J2520	
D 4354	(B,124,133) Diode	MALS068X		L 1421	(B,41,96) Inductor(EW5)	LCTCR22K2125	
D 4355	(A,121,109) Diode	DAN202U		L 1422	(B,29,104) Inductor(EW5)	LCTCR10K2125	F
D 4357	(A,107,119) Diode	MALS068X		L 1423	(B,44,88) Inductor(EW5)	LCTAW101J2520	
D 4358	(A,117,119) Diode	MALS068X		L 1441	(A,38,85) Inductor(EW5)	LCTCR15K2125	
D 4359	(A,121,119) Diode	MALS068X		L 1443	(A,44,83) Chip Coil(EW5)	LCTAW1R0J2520	



	1	2	3	4
	<u>Circuit Symbol and No.</u>	<u>Part No.</u>	<u>Circuit Symbol and No.</u>	<u>Part No.</u>
A	L 1461 (B,17,109) Chip Coil	LCTAW4R7J2520		
	L 1462 (A,38,70) Inductor	LCTAW2R2J3225	R 601 (A,38,6)	RS1/16S104J
	L 1463 (B,24,56) Inductor	LCTAW2R2J2520	R 602 (B,39,6)	RS1/16S104J
	L 1464 (B,26,54) Chip Ferrite Bead	CTF1399	R 603 (A,95,23)	RS1/16SS220J
	L 1465 (A,33,40) Inductor	LCTAW2R2J3225	R 604 (A,96,22)	RS1/16S220J
			R 605 (B,120,38)	RS1/16SS104J
	L 2871 (B,159,114) Inductor	CTF1410		
	L 2872 (B,148,114) Inductor	CTF1410	R 607 (A,86,31) (EW5)	RS1/16SS681J
	L 2930 (A,135,94) Choke Coil 600 uH	CTH1347	R 608 (A,88,39) (EW5)	RAB4C681J
	L 3601 (A,16,13) Chip Coil	LCTAW100J2520	R 609 (B,100,36)	RS1/16SS104J
	L 4171 (B,71,62) Chip Coil	LCTAW100J2520	R 610 (B,95,37)	RS1/16SS102J
			R 612 (B,97,31)	RS1/16SS104J
B	L 4172 (B,59,60) Chip Coil	LCTAW100J2520		
	L 4231 (B,63,25) Inductor	CTF1473	R 613 (A,94,41)	RS1/16SS471J
	L 4271 (A,65,85) Inductor	LCYA2R2J2520	R 614 (A,93,41)	RS1/16SS471J
	L 4351 (A,124,110) Inductor	LCTC2R2K1608	R 615 (A,94,40)	RS1/16SS222J
	L 4352 (A,129,112) Inductor	CTF1556	R 616 (A,93,40)	RS1/16SS0R0J
			R 617 (A,94,39)	RS1/16SS0R0J
	L 4371 (A,38,117) Inductor	CTF1334		
	L 4372 (B,40,123) Inductor	CTF1334	R 618 (B,24,10)	RS1/16SS104J
	L 4601 (A,106,63) Choke Coil 27 uH	CTH1402	R 619 (B,110,37)	RS1/16SS104J
	L 4602 (A,129,63) Choke Coil 10 uH	CTH1403	R 620 (A,95,34)	RS1/16SS101J
	L 4641 (A,140,21) Inductor	CTH1255	R 627 (A,95,25)	RS1/16SS104J
			R 628 (B,88,39) (EW5)	RAB4C223J
	L 4642 (A,160,24) Inductor	CTH1257		
	L 4701 (B,86,44) Inductor	CTF1393	R 632 (B,100,45)	RS1/16SS0R0J
	L 4721 (A,43,129) Inductor(UC)	LCYC2R2K1608	R 633 (B,103,42)	RS1/16SS102J
	L 4722 (B,49,123) Inductor(UC)	CTF1334	R 634 (A,101,21)	RS1/16SS104J
	L 4723 (B,49,120) Inductor(UC)	CTF1334	R 636 (B,100,39)	RS1/16SS104J
C			R 639 (B,105,39)	RS1/16SS102J
	L 4724 (B,52,114) Inductor(UC)	CTF1334		
	L 4725 (B,48,125) Inductor(UC)	CTF1334	R 640 (B,102,39)	RS1/16SS103J
	T 1401 (A,40,104) Coil(EW5)	CTC1194	R 641 (B,100,41)	RS1/16SS103J
	T 1402 (A,42,95) Coil(EW5)	CTC1193	R 642 (B,105,24)	RS1/16SS220J
	T 1403 (A,32,96) Coil(EW5)	CTC1192	R 643 (A,100,17)	RS1/16SS104J
	TH601 (A,69,28) Thermister	CCX1051	R 646 (A,101,17)	RS1/16SS104J
	X 601 (A,91,33) Resonator 20.000 MHz	VSS1186	R 648 (B,107,24)	RS1/16S104J
	VR4231 (A,55,25) Semi-fixed 1 kohm(OB)	CCP1483	R 649 (B,104,45)	RS1/16SS220J
	⚠FU2900 (B,71,7) Fuse 250 mA	CEK1276	R 650 (A,102,17)	RS1/16SS104J
	⚠FU4351 (B,116,117) Fuse 40 A	MINISMDC075F/24	R 652 (B,106,44)	RS1/16SS220J
D	⚠FU4352 (B,128,133) Fuse 3.15 A	CEK1259	R 653 (A,109,46)	RS1/16SS102J
	⚠FU4601 (B,103,60) Fuse 5 A	CEK1261	R 654 (A,104,17)	RS1/16SS104J
	⚠FU4602 (B,143,58) Fuse 5 A	CEK1261	R 658 (A,106,15)	RS1/16SS104J
	⚠FU4631 (A,114,85) Fuse 200 mA	CEK1247	R 660 (A,115,19)	RS1/16S104J
	⚠FU4641 (A,141,8) Fuse 3.15 A	CEK1259	R 663 (A,116,20)	RS1/16SS102J
	⚠FU4642 (B,157,71) Fuse 2.5 A	CEK1258	R 664 (A,116,18)	RS1/16SS473J
	⚠FU4771 (A,115,106) Fuse 1 A	CEK1254	R 665 (B,117,49)	RS1/16SS104J
	EF4351 (B,121,119) EMI Filter	CCG1067	R 666 (B,115,23)	RS1/16SS104J
	EF4352 (B,126,119) EMI Filter(UC)	CCG1067	R 668 (B,118,21)	RS1/16SS472J
	EF4353 (A,128,119) EMI Filter(UC)	CCG1067	R 670 (A,124,32)	RS1/16SS104J
	EF4354 (A,109,119) EMI Filter	CCG1067	R 671 (A,120,31)	RS1/16SS102J
E	EF4356 (A,115,119) EMI Filter	CCG1067	R 676 (A,120,28)	RS1/16SS0R0J
	EF4357 (A,119,119) EMI Filter	CCG1067	R 677 (A,120,27)	RS1/16SS0R0J
	EF4358 (A,123,119) EMI Filter	CCG1067	R 680 (B,119,22)	RS1/16SS472J
	EF4359 (B,123,119) EMI Filter	CCG1067	R 681 (B,118,48)	RS1/16SS473J
	EF4360 (B,128,119) EMI Filter(UC)	CCG1067	R 682 (A,124,35)	RS1/16SS0R0J
	EF4361 (A,130,119) EMI Filter(UC)	CCG1067	R 683 (A,122,42)	RAB4C104J
	EF4731 (B,156,77) EMI Filter	CCG1172	R 684 (A,122,38)	RAB4C681J
	EF4732 (B,153,57) EMI Filter	CCG1172	R 685 (A,69,26)	RS1/16S102J
	ANT1401 (A,18,118) Antenna Jack	CKX1060	R 688 (B,43,8)	RS1/16SS104J
	Y 1461 (A,17,93) FM/AM Tuner Unit(UC)	CWE2098	R 689 (B,39,9)	RS1/16SS104J
	(A,17,93) FM/AM Tuner Unit(EW5)	CWE2127	R 690 (A,109,48)	RS1/16SS472J
F	⚠ Fuse 10 A	CEK1208	R 694 (A,113,47)	RS1/16SS102J
			R 701 (B,106,6)	RS1/16S221J
			R 702 (B,108,6)	RS1/16S221J

## RESISTORS



5		6		7		8	
<u>Circuit Symbol and No.</u>		<u>Part No.</u>		<u>Circuit Symbol and No.</u>		<u>Part No.</u>	
R 703	(B,109,6)	RS1/16S221J		R 2861	(B,124,108)	RS1/16SS391J	
R 704	(B,110,6)	RS1/16S221J		R 2862	(B,121,103)	RS1/16SS473J	
R 705	(B,112,6)	RS1/16S221J		R 2863	(B,115,104)	RS1/16SS223J	
R 706	(B,108,16)	RS1/16SS472J		R 2864	(B,117,105)	RS1/16SS103J	A
R 707	(B,110,16)	RS1/16SS472J		R 2865	(B,122,112)	RS1/10S102J	
R 708	(B,105,6)	RS1/16SS104J		R 2866	(B,113,115)	RS1/16SS103J	
R 709	(B,107,16)	RS1/16SS473J		R 2867	(B,116,114)	RS1/16SS103J	
R 710	(B,109,16)	RS1/16SS473J		R 2868	(B,114,114)	RS1/16SS221J	
R 713	(B,123,15)	RS1/10S0R0J		R 2869	(B,112,114)	RS1/16SS101J	
R 716	(B,107,9)	RS1/16S473J		R 2870	(A,152,110)	RS1/16S473J	
R 731	(B,94,34)	RS1/16SS0R0J		R 2871	(A,153,112)	RS1/16S104J	
R 1016	(B,69,15)	RS1/16SS0R0J		R 2872	(B,153,108)	RS1/16S102J	
R 1409	(B,20,111) (EW5)	RS1/16S105J		R 2873	(B,156,108)	RS1/16S472J	
R 1410	(A,35,102) (EW5)	RS1/16S821J		R 2874	(B,149,110)	RS1/4S102J	
R 1411	(A,34,107) (EW5)	RS1/16S330J		R 2875	(B,151,113)	RS1/4S472J	B
R 1412	(A,43,88) (EW5)	RS1/16S332J		R 2880	(A,165,120)	RS1/16S103J	
R 1413	(A,32,91) (EW5)	RS1/16S101J		R 2881	(B,147,132)	RS1/4S472J	
R 1421	(B,37,92) (EW5)	RS1/16S151J		R 2882	(B,142,132)	RS1/4S102J	
R 1422	(B,36,93) (EW5)	RS1/16S680J		R 2883	(B,124,22)	RS1/16SS472J	
R 1423	(B,40,92) (EW5)	RS1/16S152J		R 2884	(B,121,21)	RS1/16SS472J	
R 1424	(B,42,93) (EW5)	RS1/16S681J		R 2900	(A,168,124)	RS1/16S473J	
R 1425	(B,43,96) (EW5)	RS1/16S181J		R 2901	(A,169,121)	RS1/16S104J	
R 1426	(B,26,104) (UC)	RS1/4S0R0J		R 2902	(A,166,127)	RS1/4S102J	
R 1441	(A,31,84) (EW5)	RS1/16S151J		R 2903	(A,166,130)	RS1/4S472J	
R 1442	(A,32,87) (EW5)	RS1/16S680J		R 2910	(B,153,71)	RS1/16S473J	
R 1443	(A,39,87) (EW5)	RS1/16S152J		R 2911	(B,144,108)	RS1/16S473J	C
R 1444	(A,40,85) (EW5)	RS1/16S681J		R 2912	(A,59,90)	RS1/4S47J	
R 1445	(A,38,83) (EW5)	RS1/16S151J		R 2913	(A,64,92)	RS1/4S47J	
R 1461	(B,24,70)	RS1/16SS681J		R 2920	(B,91,109)	RS1/16S0R0J	
R 1462	(B,24,69)	RS1/16SS681J		R 2921	(B,87,114)	RS1/16S0R0J	
R 1463	(B,24,68)	RS1/16SS681J		R 2922	(B,87,117)	RS1/16S0R0J	
R 1464	(B,24,67)	RS1/16SS681J		R 2923	(B,94,108)	RS1/16S0R0J	
R 1465	(B,24,66)	RS1/16SS681J		R 2924	(A,95,120)	RS1/16S103J	
R 1466	(B,26,65)	RS1/16SS223J		R 2925	(A,92,120)	RS1/16S103J	
R 1467	(B,24,65) (EW5)	RS1/16SS681J		R 2926	(A,102,118)	RS1/16S103J	
R 1468	(B,24,58)	RS1/16SS681J		R 2940	(B,60,6)	RS1/16S0R0J	D
R 1470	(B,25,46)	RS1/16SS0R0J		R 2941	(A,56,9)	RS1/16SS101J	
R 1471	(B,25,44)	RS1/16SS0R0J		R 2942	(A,60,15)	RS1/16SS101J	
R 1474	(B,29,46)	RS1/16SS0R0J		R 2943	(B,61,12)	CTF1556	
R 1475	(B,32,44)	RS1/16SS0R0J		R 2944	(B,61,13)	CTF1556	
R 1476	(B,27,49) (EW5)	RS1/16SS0R0J		R 2945	(B,58,13)	CTF1556	
R 1477	(B,27,51) (EW5)	RS1/16SS0R0J		R 2946	(B,65,8)	CTF1556	
R 1478	(B,27,50) (EW5)	RS1/16SS0R0J		R 2947	(A,59,21)	CTF1675	
R 1479	(B,27,52) (EW5)	RS1/16SS0R0J		R 2948	(A,60,21)	CTF1675	
R 2801	(B,160,95)	RN1/16SE1002D		R 2949	(A,64,21)	CTF1675	
R 2802	(B,158,94)	RN1/16SE2701D		R 2950	(A,66,21)	CTF1675	
R 2803	(B,157,96)	RN1/16SE2201D		R 2951	(B,66,18)	RS1/16SS0R0J	E
R 2804	(B,158,99)	RS1/16S104J		R 2952	(B,68,18)	RS1/16SS0R0J	
R 2810	(B,110,98)	RS1/8S0R0J		R 2953	(B,65,13)	RS1/16SS0R0J	
R 2811	(A,99,97)	RS1/16S471J		R 2954	(B,69,11)	RS1/16SS0R0J	
R 2820	(B,159,84)	RS1/16S2201D		R 2959	(B,76,4)	RS1/16S0R0J	
R 2821	(B,159,86)	RS1/16S1002D		R 2960	(B,73,8)	RS1/16SS0R0J	
R 2822	(B,159,88)	RS1/16S2201D		R 2961	(B,74,8)	RS1/16SS0R0J	
R 2823	(A,139,48)	RS1/16SS105J		R 2962	(A,77,17)	RS1/16SS0R0J	
R 2830	(B,32,27)	RS1/16S3601D		R 2963	(A,78,17)	RS1/16SS0R0J	
R 2831	(B,30,24)	RS1/16S10R0D		R 2964	(A,80,21)	RS1/16SS0R0J	
R 2832	(A,27,35)	RS1/16S2201D		R 2967	(B,76,18)	RS1/16SS0R0J	F
R 2833	(A,32,27) (EW5)	RS1/16S0R0J		R 2968	(B,76,7)	RS1/16SS0R0J	
R 2834	(B,37,30)	RS1/16S104J		R 2969	(B,77,7)	RS1/16SS0R0J	
R 2860	(B,125,107)	RS1/16SS391J		R 2970	(B,79,14)	RS1/16SS0R0J	

1

2

3

4

**Circuit Symbol and No.****Part No.****Circuit Symbol and No.****Part No.**

A	R 2971	(B,78,7)	RS1/16SS0R0J	R 4254	(B,99,111)	RS1/16SS101J
	R 2972	(B,80,7)	RS1/16SS0R0J	R 4255	(B,106,112)	RS1/16SS101J
	R 2973	(B,81,14)	RS1/16SS0R0J	R 4263	(A,104,109)	RS1/16SS0R0J
	R 2976	(B,83,7)	RS1/16SS0R0J	R 4271	(B,57,65)	RS1/16S0R0J
	R 2977	(B,84,7)	RS1/16SS0R0J			
	R 2978	(A,84,20)	RS1/16SS0R0J	R 4272	(B,85,64) (UC)	RS1/16S181J
	R 2979	(A,86,18)	RS1/16SS0R0J	R 4273	(B,55,68) (UC)	RS1/16S181J
	R 2980	(A,87,18)	RS1/16SS0R0J	R 4274	(B,86,66) (UC)	RS1/16S223J
	R 2981	(A,87,22)	RS1/16SS0R0J	R 4275	(B,84,67) (UC)	RS1/16S102J
	R 2982	(A,89,9)	RS1/16SS0R0J	R 4276	(B,52,68) (UC)	RS1/16S223J
B	R 3601	(B,28,21)	RS1/16S224J	R 4277	(B,50,69) (UC)	RS1/16S102J
	R 3602	(B,33,21)	RS1/16S102J	R 4283	(B,59,74)	RS1/16SS0R0J
	R 3603	(B,26,24)	RS1/16S222J	R 4284	(B,86,70)	RS1/16SS0R0J
	R 3604	(B,22,20)	RS1/16S224J	R 4287	(B,75,74)	RS1/16SS102J
	R 3605	(B,18,13)	RS1/16S102J	R 4289	(B,75,75)	RS1/16SS102J
	R 3606	(B,23,22)	RS1/16S222J	R 4291	(B,75,76)	RS1/16SS102J
	R 3607	(B,15,20)	RS1/16S224J	R 4293	(B,77,80)	RS1/16SS0R0J
	R 3608	(B,15,15)	RS1/16S102J	R 4295	(B,58,76)	RS1/16SS0R0J
	R 3609	(B,14,23)	RS1/16S222J	R 4296	(A,53,74)	RS1/16S0R0J
	R 3610	(B,28,18)	RS1/16S121J	R 4312	(B,77,31)	RS1/16SS821J
C	R 3611	(B,26,20)	RS1/16S101J	R 4313	(B,78,36)	RS1/16SS104J
	R 3612	(B,30,15)	RS1/16S101J	R 4316	(B,83,44)	RS1/16SS0R0J
	R 3616	(B,19,20)	RS1/16S121J	R 4317	(B,79,44)	RS1/16SS0R0J
	R 3617	(B,19,22)	RS1/16S151J	R 4331	(B,106,92) (UC)	RS1/16SS821J
	R 3618	(B,20,15)	RS1/16S101J	R 4332	(B,99,92) (UC)	RS1/16SS821J
	R 3622	(B,10,20)	RS1/16S151J	R 4333	(B,96,85)	RS1/16SS821J
	R 3623	(B,11,22)	RS1/16S181J	R 4334	(B,89,85)	RS1/16SS821J
	R 3624	(B,13,16)	RS1/16S101J	R 4335	(B,96,92) (UC)	RS1/16SS821J
	R 3629	(B,70,7)	RS1/16S0R0J	R 4336	(B,89,92) (UC)	RS1/16SS821J
	R 4001	(B,57,61)	RS1/16S750J	R 4337	(B,104,92) (UC)	RS1/16SS223J
D	R 4021	(A,53,49)	RS1/16S750J	R 4338	(B,95,85)	RS1/16SS223J
	R 4041	(B,57,37)	RS1/16S750J	R 4339	(B,95,92) (UC)	RS1/16SS223J
	R 4061	(A,57,48)	RS1/16S102J	R 4340	(B,100,92) (UC)	RS1/16SS223J
	R 4151	(B,64,32)	RS1/16SS103J	R 4341	(B,90,85)	RS1/16SS223J
	R 4152	(B,63,33)	RS1/16SS103J	R 4342	(B,90,92) (UC)	RS1/16SS223J
	R 4153	(B,66,33)	RS1/16SS103J	R 4343	(B,103,89) (UC)	RS1/16SS471J
	R 4154	(B,65,32)	RS1/16SS103J	R 4344	(B,94,82)	RS1/16SS471J
	R 4155	(B,68,35)	RS1/16SS102J	R 4345	(B,94,89) (UC)	RS1/16SS471J
	R 4156	(B,69,36)	RS1/16SS104J	R 4346	(B,101,89) (UC)	RS1/16SS471J
	R 4157	(B,72,34)	RS1/16SS104J	R 4347	(B,92,82)	RS1/16SS471J
E	R 4158	(B,74,33)	RS1/16SS683J	R 4348	(B,92,89) (UC)	RS1/16SS471J
	R 4159	(B,72,32)	RS1/16SS473J	R 4351	(A,126,111)	RS1/16S153J
	R 4170	(B,82,53)	RS1/16SS223J	R 4352	(A,130,111)	RS1/10S103J
	R 4171	(B,79,49)	RS1/16SS223J	R 4601	(B,106,61)	RS1/10S0R0J
	R 4174	(B,65,21)	RS1/16SS223J	R 4602	(B,110,59)	RS1/16S2200D
	R 4175	(B,63,21)	RS1/16SS223J	R 4603	(B,111,59)	RS1/16S4701D
	R 4176	(B,75,57)	RS1/16SS0R0J	R 4604	(B,112,59)	RS1/16S1501D
	R 4194	(B,62,41)	RS1/16SS221J	R 4605	(B,108,59)	RS1/16S101J
	R 4195	(B,63,40)	RS1/16SS221J	R 4606	(B,115,59)	RS1/16S332J
				R 4607	(B,118,59)	RS1/16S104J
F	R 4231	(B,59,26)	RS1/16SS223J	R 4608	(B,115,69)	RS1/16S473J
	R 4232	(B,59,21)	RS1/16SS303J	R 4609	(B,111,64)	RS1/16S1503D
	R 4233	(B,57,21)	RS1/16SS681J	R 4610	(B,109,62)	RS1/16S8203D
	R 4234	(B,57,23)	RS1/16SS102J	R 4611	(B,120,60)	RS1/10S100J
	R 4235	(B,62,21)	RS1/16SS681J	R 4612	(B,125,67)	RS1/16S100J
	R 4236	(B,54,18)	RS1/16SS152J	R 4614	(B,125,64)	RS1/16S184J
	R 4237	(B,57,18)	RS1/16SS0R0J	R 4615	(B,142,55)	RS1/16S105J
	R 4240	(B,59,27)	RS1/16SS0R0J	R 4616	(B,92,99)	RS1/8S222J
	R 4251	(B,101,113)	RS1/16S750J	R 4633	(A,128,85)	RS1/16SS821J
	R 4252	(B,103,112)	RS1/16SS473J	R 4641	(B,140,8)	RS1/4SA561J
	R 4253	(B,101,111)	RS1/16SS473J	R 4643	(B,142,19)	RS1/16S331J

1

2

3

4



	1	2	3	4
	<u>Circuit Symbol and No.</u>	<u>Part No.</u>	<u>Circuit Symbol and No.</u>	<u>Part No.</u>
A	C 2810 (A,105,101)	CEVW101M16	C 4171 (A,70,61)	CEVLW470M16
	C 2811 (B,101,102)	CKSRYB104K50	C 4172 (B,73,60)	CKSRYB104K50
	C 2812 (A,106,96)	CKSRYB104K50		
	C 2820 (A,158,86) 100 uF/16 V	CCH1565	C 4173 (A,58,58)	CEVLW470M16
			C 4174 (B,74,60)	CKSYB226K6R3
	C 2821 (A,163,87)	CKSRYB103K50	C 4181 (B,61,57)	CKSRYB104K50
	C 2823 (A,163,91)	CKSRYB104K50	C 4182 (B,76,59)	CKSRYB104K50
	C 2830 (A,32,34)	CEVW101M16	C 4183 (B,63,59)	CKSYB226K6R3
	C 2831 (B,32,29)	CKSRYB103K50		
	C 2833 (B,35,28)	CKSRYB104K50	C 4184 (B,64,61)	CKSRYB104K50
B			C 4185 (B,58,39)	CKSQYB475K10
	C 2860 (A,119,114)	CEVW470M16	C 4186 (B,57,49)	CKSQYB475K10
	C 2861 (B,120,114)	CKSRYB104K50	C 4187 (B,58,42)	CKSQYB475K10
	C 2862 (A,110,113)	CEVW330M10	C 4188 (B,66,61)	CKSRYB105K10
	C 2870 (A,150,109)	CKSRYB102K50		
	C 2871 (B,146,114)	CKSRYB102K50	C 4189 (B,68,61)	CKSRYB105K10
			C 4190 (B,69,58)	CKSRYB105K10
	C 2872 (B,157,114)	CKSRYB102K50	C 4191 (B,70,58)	CKSRYB105K10
	C 2881 (A,167,110)	CKSQYB105K16	C 4192 (B,67,58)	CKSRYB105K10
	C 2882 (B,145,132)	CKSRYB102K50	C 4193 (B,78,59)	CKSRYB105K10
C	C 2890 (B,161,103)	CKSRYB104K50		
	C 2891 (B,161,106)	CKSRYB102K50	C 4194 (B,65,58)	CKSRYB105K10
			C 4195 (B,57,55)	CKSQYB475K10
	C 2892 (A,161,110)	CKSRYB102K50	C 4197 (B,57,58)	CKSQYB475K10
	C 2901 (A,169,129)	CKSRYB104K50	C 4198 (B,79,59)	CKSRYB105K10
	C 2910 (A,150,64)	CEAT103M16(P30)	C 4199 (A,57,53)	CKSRYB105K10
	C 2911 (A,59,104)	CEAT103M16(P30)		
	C 2912 (A,77,95)	CEAT103M16(P30)	C 4200 (B,78,52)	CKSRYB105K10
			C 4201 (A,57,51)	CKSRYB105K10
	C 2920 (B,92,113)	CKSQYB105K16	C 4202 (B,79,54)	CKSRYB105K10
D	C 2921 (B,81,114)	CKSQYB105K16	C 4203 (B,57,52)	CKSQYB475K10
	C 2922 (B,81,117)	CKSQYB105K16	C 4204 (B,78,51)	CKSRYB105K10
	C 2923 (B,96,115)	CKSQYB105K16		
	C 2924 (A,99,120)	CKSRYB104K50	C 4206 (B,77,50)	CKSRYB105K10
			C 4207 (B,57,48)	CKSRYB105K10
	C 2925 (B,92,116)	CKSRYB105K10	C 4208 (A,78,22)	CKSRYB105K10
	C 2926 (B,78,114)	CKSRYB105K10	C 4210 (A,74,21)	CKSRYB105K10
	C 2927 (B,78,117)	CKSRYB105K10	C 4211 (B,57,43)	CKSQYB475K10
	C 2928 (B,94,116)	CKSRYB105K10		
	C 2929 (A,93,114)	CEVW101M25	C 4212 (A,71,21)	CKSRYB105K10
E			C 4213 (A,68,21)	CKSRYB105K10
	C 2930 (A,102,114)	CKSRYB104K50	C 4215 (B,76,44)	CKSRYB105K10
	C 2931 (A,99,118)	CKSRYB105K10	C 4216 (B,58,36)	CKSQYB475K10
	C 2932 (A,76,119)	CKSQYB225K10	C 4217 (B,75,43)	CKSRYB105K10
	C 2933 (A,81,119)	CKSYB225K16		
	C 2934 (A,81,116)	CEVW100M16	C 4221 (B,72,39)	CKSRYB105K10
			C 4222 (B,73,40)	CKSRYB105K10
	C 2935 (A,147,80) 3 300 uF/16 V	CCH1018(P30)	C 4224 (B,57,46)	CKSRYB105K10
	C 3601 (B,26,22)	CKSQYB475K6R3	C 4231 (B,61,24)	CKSRYB105K10
	C 3602 (A,15,18) 10 uF	CCG1203	C 4232 (A,63,26)	CEVWNP220M10
F	C 3604 (B,21,22)	CKSQYB475K6R3		
	C 3607 (B,13,22)	CKSQYB475K6R3	C 4233 (A,55,17)	CEVQW101M10
			C 4251 (B,104,112)	CKSRYB473K50
	C 3611 (A,7,25)	CKSSYB102K50	C 4252 (B,100,110) 10 uF	CCG1203
	C 3612 (A,7,23)	CKSSYB102K50	C 4253 (B,105,110) 10 uF	CCG1203
	C 3613 (A,7,22)	CKSSYB102K50	C 4254 (B,101,104)	CKSRYB104K25
	C 4061 (A,53,37)	CKSRYB103K50		
			C 4264 (A,85,109)	CEVQW101M10
	C 4062 (A,59,43)	CEVW100M16	C 4271 (B,81,67) 10 uF(UC)	CCG1203
	C 4063 (A,53,40)	CKSRYB104K50	C 4273 (B,84,65) (UC)	CKSRYB105K6R3
G	C 4151 (B,63,30) 10 uF	CCG1203	C 4274 (B,78,64)	CKSRYB105K6R3
	C 4152 (B,60,31) 10 uF	CCG1203	C 4275 (B,60,63)	CKSRYB105K6R3
	C 4153 (B,66,32)	CCSSCH221J50	C 4276 (B,58,66)	CKSRYB105K6R3
	C 4154 (B,70,30)	CKSSYB104K16	C 4277 (B,53,70) 10 uF(UC)	CCG1203
	C 4155 (B,66,35)	CKSSYB103K25	C 4280 (B,61,68) (UC)	CKSRYB105K6R3
	C 4156 (B,74,34)	CKSSYB104K16	C 4281 (B,59,71)	CKSRYB105K6R3
	C 4157 (B,73,34)	CCSSCH151J50	C 4284 (B,83,68)	CKSRYB105K6R3
	C 4158 (B,71,35)	CCSSCH151J50	C 4285 (B,61,70)	CKSRYB105K6R3
H	C 4159 (B,77,29)	CKSQYB225K10	C 4286 (B,78,71)	CKSRYB105K6R3
	C 4160 (B,65,33)	CCSSCH221J50	C 4287 (B,60,72)	CKSRYB105K6R3



1

2

3

4

**Circuit Symbol and No.****Part No.****Circuit Symbol and No.****Part No.**

D 870	(A,7,56) Diode	MALS068X
D 871	(A,9,67) Diode	MALS068X
D 872	(A,9,65) Diode	MALS068X
S 801	(A,8,86) Push Switch	CSG1155
S 802	(A,11,80) Push Switch	CSG1155
S 803	(A,18,51) Switch(ROTARY COMMANDER)	CSX1135
S 804	(A,18,84) Push Switch	CSG1155
S 805	(A,24,80) Push Switch	CSG1155
ANT801	(A,4,39) Antenna	CTX1095

R 222	(B,35,32)	RS1/16SS103J
R 225	(A,49,49)	RS1/16SS103J
R 226	(A,49,50)	RS1/16SS393J
R 227	(B,45,51)	RS1/16SS562J
R 228	(B,42,53)	RS1/16SS122J
R 229	(B,44,53)	RS1/16SS472J
R 230	(B,21,28)	RS1/16SS0R0J
R 232	(B,43,51)	RS1/16SS122J
R 233	(B,29,52)	RS1/16SS103J
R 234	(B,30,61)	RS1/16SS473J

**RESISTORS**

R 801	(B,23,57)	RS1/16S0R0J
R 802	(A,10,62)	RS1/16S0R0J
R 803	(B,8,61)	RS1/16S102J
R 804	(B,17,50)	RS1/16S162J
R 805	(B,6,76)	RS1/16S123J
R 806	(B,20,50)	RS1/16S302J
R 807	(A,18,76)	RS1/16S132J
R 808	(B,18,83)	RS1/16S103J
R 809	(A,18,79)	RS1/16S272J
R 810	(A,23,66)	RS1/16S241J

R 235	(A,25,63)	RS1/16SS473J
R 239	(B,26,48)	RS1/16SS473J
R 240	(B,10,31)	RS1/16SS473J
R 241	(B,9,32)	RS1/16SS103J

R 244	(A,20,52)	RS1/16SS473J
R 255	(A,27,63)	RAB4CQ104J
R 307	(A,34,19)	RS1/16SS183J
R 308	(A,38,20)	RS1/16SS183J
R 309	(A,35,21)	RS1/16SS183J

R 310	(A,38,21)	RS1/16SS183J
R 601	(B,28,38)	RS1/16SS0R0J
R 602	(B,27,41)	RS1/16SS0R0J
R 606	(B,23,41)	RS1/16SS0R0J
R 701	(B,16,35)	RS1/16SS221J

**CAPACITORS**

C 803	(A,19,63)	CKSRYB103K25
C 804	(A,10,63)	CKSRYB103K25
C 805	(A,13,67)	CKSRYB104K25
C 806	(A,14,67)	CKSRYB104K25

R 702	(A,23,55)	RS1/16SS221J
-------	-----------	--------------

**CAPACITORS**

C 106	(B,56,69)	CKSQYB475K6R3
C 202	(A,27,57)	CKSSYB104K10
C 204	(A,24,63)	CKSSYB103K16
C 205	(B,23,43)	CKSQYB475K6R3

C 206	(A,22,39)	CKSSYB104K10
C 207	(A,24,37)	CKSRYB104K10
C 209	(B,33,40)	CEVW220M6R3
C 210	(B,29,42)	CKSSYB104K10
C 211	(A,27,34)	CKSSYB104K10

C 212	(B,29,32)	CKSRYB104K16
C 213	(A,44,37)	CKSSYB104K10
C 214	(A,28,33)	CKSSYB104K10
C 216	(A,50,51)	CKSSYB332K50
C 217	(A,46,51)	CKSSYB104K10

C 218	(A,49,51)	CKSSYB473K10
C 219	(A,45,53)	CKSSYB104K10
C 220	(A,46,53)	CKSSYB182K50
C 221	(A,44,53)	CKSSYB104K10
C 222	(B,43,53)	CCSSCH560J50

C 223	(B,45,53)	CCSSCH4R0C50
C 224	(A,43,55)	CKSSYB104K10
C 226	(A,40,58)	CCSSCH680J50
C 227	(A,40,60)	CCSSCH470J50
C 228	(A,39,62)	CKSSYB103K16

C 229	(B,49,59)	CKSSYB104K10
C 236	(A,42,61)	CKSSYB104K10
C 239	(B,44,51)	CCSSCH220J50
C 240	(A,35,61)	CKSSYB104K10
C 250	(B,36,30)	CKSSYB102K50

C 251	(B,33,29)	CKSSYB102K50
C 303	(A,35,19)	CKSSYB472K25

**Unit Number : CWX3514****Unit Name : CD Core Unit(S10.5COMP2)****MISCELLANEOUS**

IC 201	(A,34,46) IC	PE5547A
IC 301	(A,27,14) IC	BA5839FP
Q 101	(B,56,72) Transistor	2SA1577
Q 102	(B,47,57) Chip Transistor	2SB1689
X 201	(A,23,35) Ceramic Resonator 16.934 MHz	CSS1603
S 901	(A,53,37) Switch(HOME)	CSN1067
S 903	(B,19,58) Switch(DSCSNS)	CSN1067
S 904	(B,38,67) Switch(12EJ)	CSN1068
S 905	(B,24,68) Switch(8EJ)	CSN1068

**RESISTORS**

R 101	(B,60,73)	RS1/10SR2R4J
R 102	(B,59,71)	RS1/10SR2R4J
R 103	(B,60,71)	RS1/10SR2R7J
R 104	(B,52,69)	RS1/16SS222J
R 105	(B,41,57)	RS1/16SS102J

R 107	(B,41,59)	RS1/16SS105J
R 202	(B,32,62)	RS1/16SS473J
R 203	(B,42,45)	RS1/16S473J
R 204	(A,25,61)	RS1/16SS221J

R 206	(B,26,53)	RS1/16SS104J
R 210	(B,13,32)	RS1/16SS102J
R 214	(B,36,34)	RS1/16SS472J
R 216	(B,47,49)	RS1/16SS472J
R 221	(B,36,32)	RS1/16SS103J

1

2

3

4

<u>Circuit Symbol and No.</u>		<u>Part No.</u>
C 304	(A,34,21)	CKSSYB223K16
C 307	(B,25,9)	CKSRYB104K16
C 308	(B,10,27)	CKSRYB105K10
C 703	(B,11,37)	CCSSCH101J50
C 704	(B,8,36)	CKSSYB102K50
C 711	(A,25,26)	CKSSYB104K10

## Miscellaneous Parts List

	Pickup Unit(P10.5)(Service)	CXX1942
M 1	Motor Unit(SPINDLE)	CXC7134
M 2	Motor Unit(LOADING/CARRIAGE)	CXC4026
U 1	Navi Unit(UC)	CWX3641
	Navi Unit(EW5)	CWX3639

# Service Manual

ORDER NO.  
**CRT3815**

**CD MECHANISM MODULE(S10.5COMP2)**

# CX-3195

**This service manual describes the operation of the CD mechanism module incorporated in models listed in the table below.**

**When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module
DEH-2900MP/XN/EW5 DEH-2920MP/XN/EW5 DEH-2900MPB/XN/EW5 DEH-2910MP/XN/UR	CRT3802	CXK5760
DEH-2950MP/XN/ES DEH-2950MP/XN/ES1 DEH-2990MP/XN/ID	CRT3820	CXK5760
DEH-P390MP/XU/UC DEH-P3900MP/XU/UC	CRT3816	CXK5760
DEH-P4950MP/XU/ES DEH-P4950MP/XU/CN5	CRT3817	CXK5760
DEH-P2900MP/XU/UC	CRT3823	CXK5760
DEH-P3950MP/XU/ES DEH-P3950MP/XU/CN5	CRT3824	CXK5760
DEH-P5900MP/XU/EW5	CRT3828	CXK5760

Model	Service Manual	CD Mechanism Module
DEH-3900MP/XN/EW5 DEH-3990MP/XN/ID	CRT3804 CRT3829	CXK5760 CXK5760
DEH-P40MP/XU/EW5 DEH-P4950MP/XU/ES	CRT3834 CRT3835	CXK5760 CXK5760
DEH-P490IB/XN/UC DEH-P4900IB/XN/UC	CRT3846	CXK5760
DEH-P4900IB/XN/EW5	CRT3847	CXK5760
DEH-P5950IB/XN/ES DEH-P5950IB/XN/ES1 DEH-P5990IB/XN/ID	CRT3848	CXK5760
DEH-P590IB/XN/UC DEH-P5900IB/XN/UC	CRT3851	CXK5760
DEH-P6900IB/XN/EW5 DEH-P6950IB/XN/ES DEH-P6950IB/XN/ES1	CRT3852 CRT3853	CXK5760 CXK5760



CONTENTS

1. CIRCUIT DESCRIPTIONS ..... 3

2. MECHANISM DESCRIPTIONS..... 20

3. DISASSEMBLY ..... 22

A

B

C

D

E

F

# 1. CIRCUIT DESCRIPTIONS

The recent mainstay of the CD LSI is the LSI integrating the core DSP with DAC or RF amplifier, which are generally employed as peripheral circuits, however, PE5547A, used in this product, is an LSI integrating the afore-mentioned LSI unit and microcomputer unit in one chip.

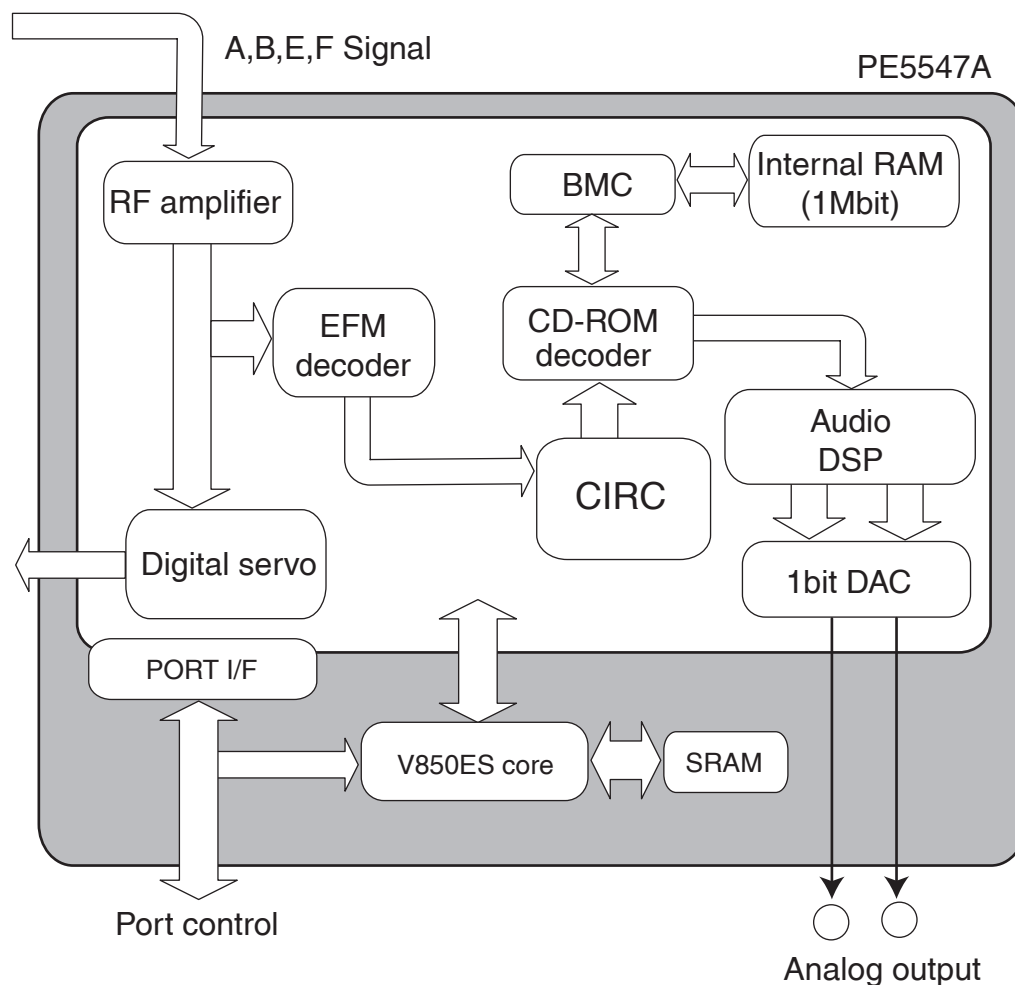


Fig.1.0.1 Block diagram of CD LSI PE5547A

## 1.1 PREAMPLIFIER BLOCK

In the preamplifier block, the pickup output signals are processed to generate signals that are used in the subsequent blocks: servo, demodulator, and control blocks. Signals from the pickup are I/V converted in the pickup with the preamplifier with built-in photo detectors, and after added with the RF amplifier, they are used to produce such signals as RF, FE, TE, and TE zero-cross signals. The preamplifier block is built in CD LSI PE5547A (IC201), whose parts are described individually below. Incidentally, as this LSI employs a single power supply (+ 3.3 V) specification, the reference voltages of this LSI and the pickup are the REFO (1.65 V) for both. The REFO is an output obtained from REFOUT in the LSI via the buffer amplifier, and is output from the pin 133 of this LSI. All measurements will be performed with this REFO as the reference.

Caution: Be careful not to short-circuit the REFO and GND when measuring.

### 1.1.1 APC (Automatic Power Control) circuit

Since laser diodes have extremely negative temperature characteristics in optical output when driven in constant current, it is necessary to control the current with the monitor diodes in order to keep the output constant. This is the feature of the APC circuit. The LD current is obtained by measuring the voltage between LD1 and V3R3, and divide the value by 7.5 (ohms), which becomes about 30 mA. The voltage between LD1 and V3R3 is set to about 225 mV.

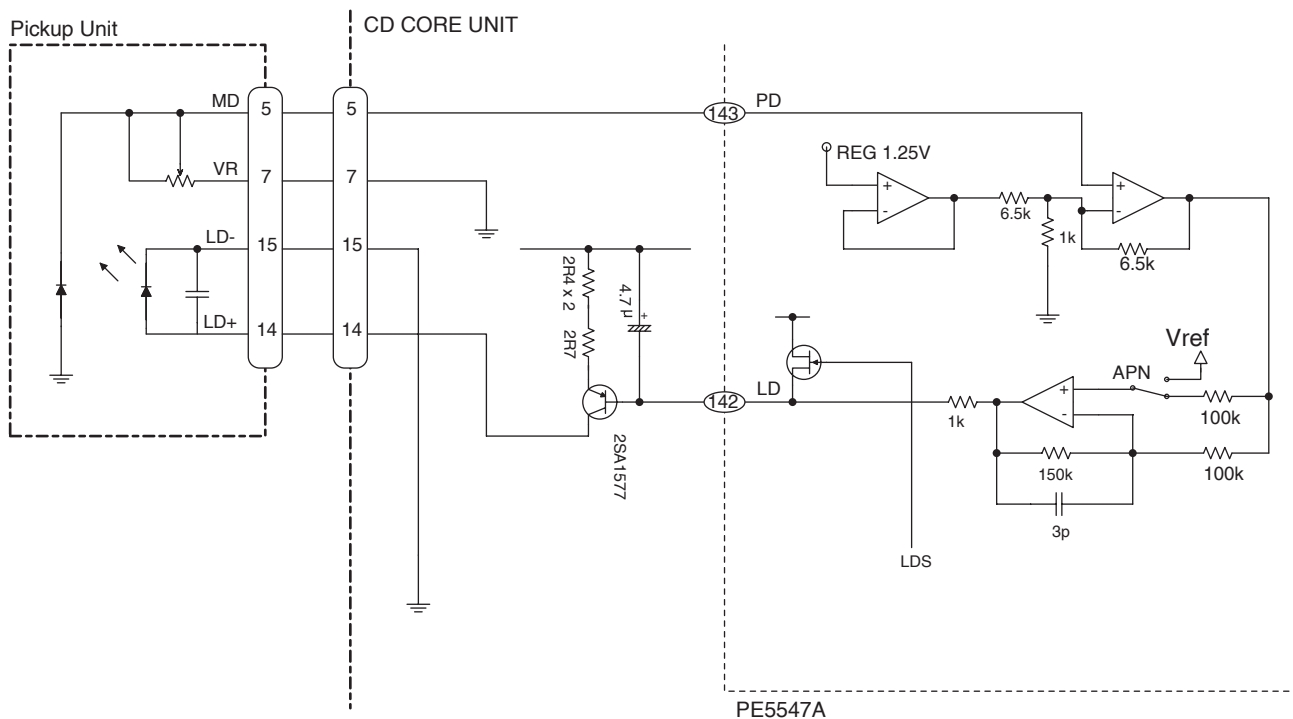


Fig.1.1.1 APC

### 1.1.2 RF and RFAGC amplifiers

The output from the photo-detector (A + C) and (B + D) is provided from the RFO terminal as the RF signal (which can be used for eye-pattern check), after it is added, amplified, and equalized inside this LSI. The low frequency component of the voltage RFO is calculated as below.

$$RFO = (A + B + C + D) \times 2$$

The RFO is used for the FOK generation circuit and RF offset adjustment circuit.

The RFO signal, output from the pin 122, is A/C-coupled externally, input to the pin 121, and amplified in the RFAGC amplifier to obtain the RFAGC signal.

Also, this LSI is equipped with the RFAGC auto-adjustment function, explained below, which switches feedback gains of the RFAGC amplifier so that the RFO output will be 1.5 V.

This RFO signal is also used for the EFM, DFCT, MIRR, and RFAGC auto-adjustment circuits.

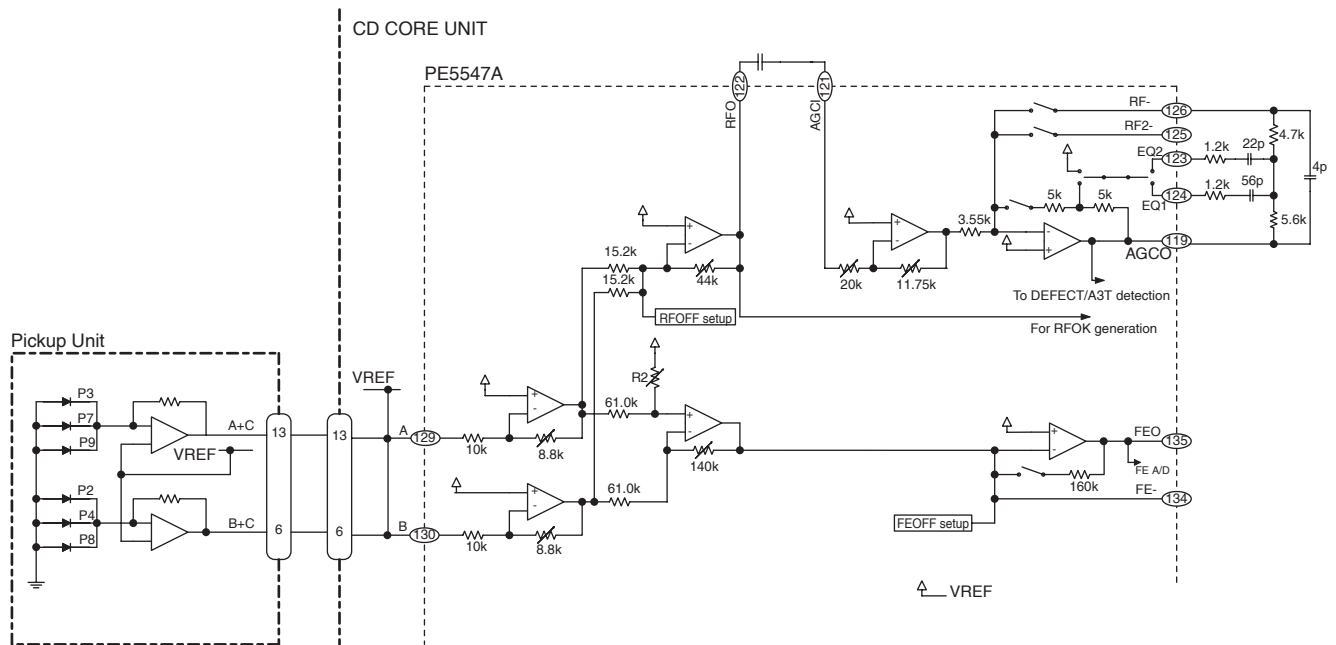


Fig.1.1.2 RF/AGC/FE

### 1.1.3 Focus error amplifier

The photo-detector outputs (A + C) and (B + D) are passed through the differential amplifier and the error amplifier, and (A + C - B - D) is provided from the pin 135 as the FE signal. The low frequency component of the voltage FE is calculated as below.

$$\begin{aligned} FE &= (A + C - B - D) \times 8.8k / 10k \times 111k / 61k \times 160k / 72k \\ &= (A + C - B - D) \times 3.5 \end{aligned}$$

For the FE outputs, an S-shaped curve of 1.5 Vp-p is obtained with the REFO as the reference. The cutoff frequency for the subsequent stage amplifiers is 14.6 kHz.

### 1.1.4 RFOK circuit

This circuit generates the RFOK signal, which indicates the timing to close the focus loop and focus-close status during the play mode, from the pin 70. As for the signal, "H" is output in closing the focus loop and during the play mode.

Additionally, the RFOK becomes "H" even in a non-pit area, since the DC level of the RFO signal is peak-held in the subsequent digital block and compared at a certain threshold level to generate the RFOK signal. Therefore, the focus is closed even on a mirror-surface area of a disc. This signal is also supplied to the microcomputer via the low-pass filter as the FOK signal, which is used for protection and gain switching of the RF amplifier.

### 1.1.5 Tracking error amplifier

The photo-detector outputs E and F are passed through the differential amplifier and the error amplifier to obtain (E - F), and then provided from the pin 138 as the TE signal. The low frequency component of the voltage TE is calculated as below.

$$\begin{aligned} TEO &= (E - F) \times 63k / 112k \times 160k / 160k \times 181k / 45.4k \times 160k / 80k \\ &= (E - F) \times 4.48 \end{aligned}$$

For the TE output, TE waveform of about 1.3 Vp-p with the REFO as the reference. The cutoff frequency in the subsequent is 21.1 kHz.

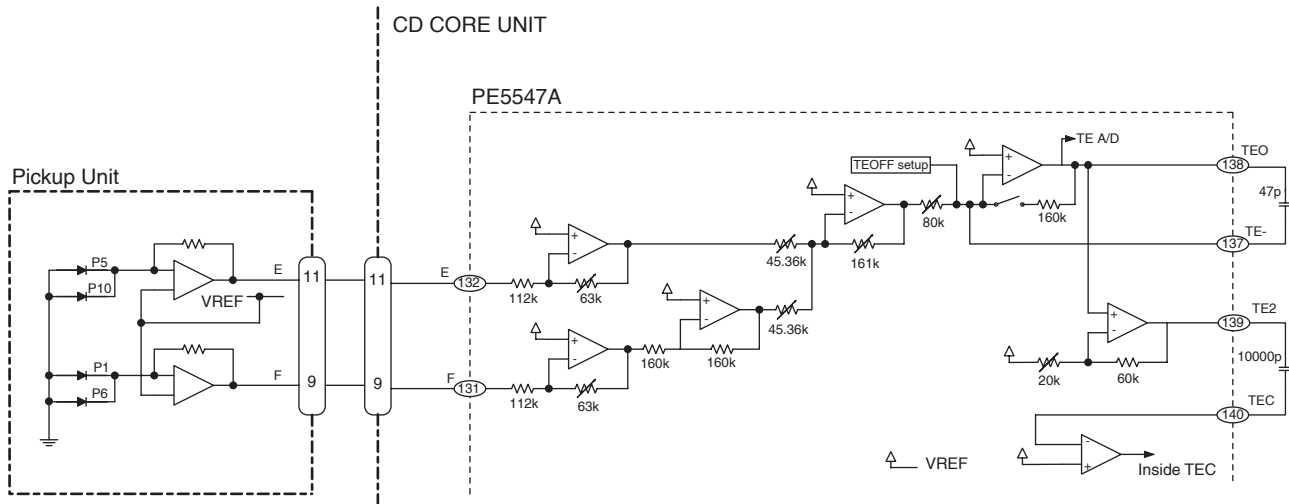


Fig.1.1.3 TE

### 1.1.6 Tracking zero-cross amplifier

The tracking zero-cross signal (hereinafter referred to as TEC signal) is obtained by amplifying the TE signal by fourfold, and used to detect the tracking-error zero-cross point. As the purpose of detecting the zero-cross point, the following two points can be named:

1. To use for track-counting in the carriage move and track jump modes
2. To use for detecting the direction in which the lens moves in tracking close. (Used in the tracking brake circuit to be explained later.)

The frequency range of the TEC signal is from 300 Hz to 20 kHz, and

TEC voltage = TE level x 4

The TEC level can be calculated at 4.62 V, which, at this level, exceeds the D range of the operational amplifier, and clips the signal, but, because the CD LSI only uses the signal at the zero-cross point, it poses no particular problem.

### 1.1.7 EFM circuit

The EFM circuit converts the RF signal into digital signals of 0 and 1. The AGCO signal output from the pin 119 is A/C-coupled externally, input to the pin 118, and supplied to the EFM circuit.

Missing RF signal due to scratches and stains on the disc, and asymmetry of the upper and lower parts of the RF, caused by variation in disc production, cannot be entirely eliminated in AC coupling process, the reference voltage ASY of the EFM comparator is controlled, using the probability that 0 and 1 occur at 50%. Thus, the comparator level will always stay around the center of the RFO signal. This reference voltage ASY is generated by passing the EFM comparator output through the low-pass filter. The EFM signal is output from the pin 113.

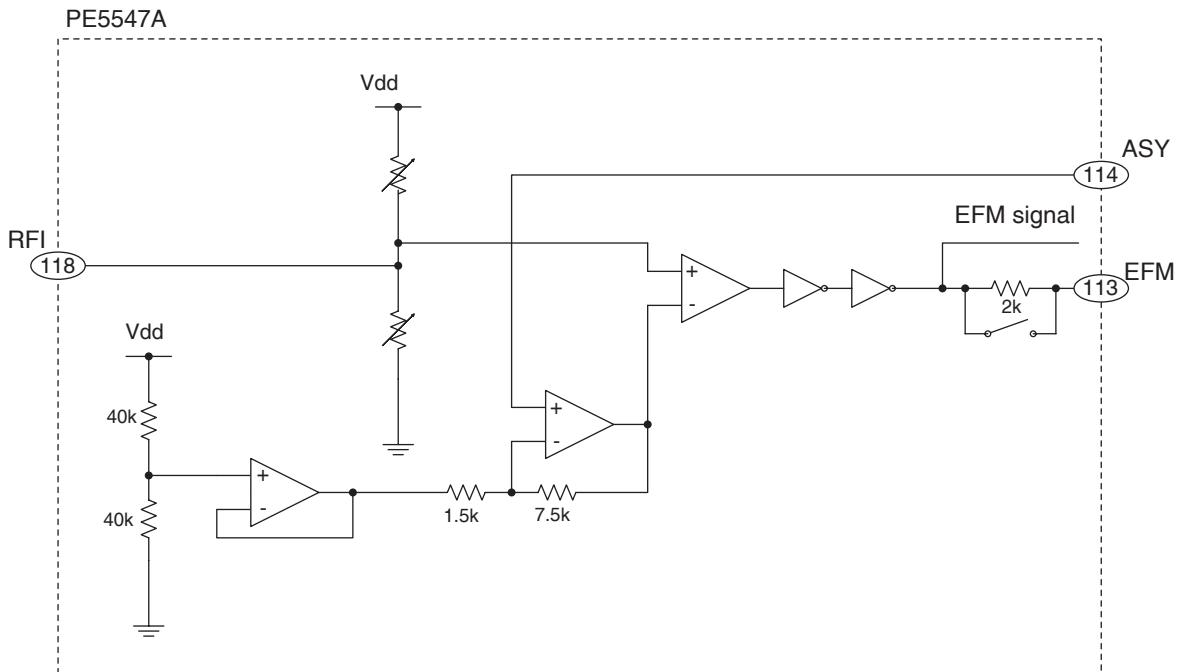


Fig.1.1.4 EFM

## 1.2 SERVO BLOCK (PE5547A: IC201)

The servo block performs servo control such as error signal equalizing, in-focus, track jump and carriage move. The DSP block is the signal-processing unit, where data decoding, error correction, and compensation are performed. The FE and TE signals, generated in the preamplifier stage, are A/D-converted, and output drive signals for the focus, tracking, and carriage systems via the servo block. Also, the EFM signal is decoded in the signal-processing unit, and ends up in outputting D/A-converted audio signals through the D/A converter. Furthermore, in this decoding process, the spindle servo error signal is generated, supplied to the spindle servo block, and used to output the spindle drive signal.

Each drive signal for focus, tracking, carriage, and spindle servos (FD, TD, SD, and MD) are output as PWM3 data, and then converted to analog data through the LPF. These drive signals, after changed to analog form, can be monitored with the FIN, TIN, CIN, and SIN signals, respectively. Subsequently, the signals are amplified and supplied to the actuator and motor for each signal.

### 1.2.1 Focus servo system

The main equalizer of the focus servo consists of the digital equalizer block. The figure 1.2.1 shows the block diagram of the focus servo system.

In the focus servo system, it is necessary to move the lens within the in-focus range in order to close the focus loop. For that purpose, the in-focus point is looked for by moving the lens up and down with the focus search voltage of triangular signal. During this time, the rotation of the spindle motor is retained at a certain set speed by kicking the spindle motor.

The servo LSI monitors the FE and RFOK signals and automatically performs the focus-close operations at an appropriate timing. The focus-close operation is performed when the following three conditions are satisfied at the same time:

- 1) The lens moves toward the disc surface.
- 2) RFOK = "H"
- 3) The FE signal is zero-crossed.

Consequently, the FE converges to "0" (= REFO).

When the above-mentioned conditions are met and the focus loop is closed, the FSS bit is shifted from "H" to "L," and then, in 10 ms, the CPU of the LSI starts monitoring the RFOK signal obtained through the low-pass filter.

If the RFOK signal is determined to be "L," the CPU of the LSI takes several actions including protection.

Fig.1.2.2 shows a series of actions concerning the focus close operations. (It shows a case where the focus loop cannot be closed.)

With the focus mode selector displaying 01 in the test mode, pressing the focus close button, allows to check the S-shaped curve, search voltage, and actual lens behavior.

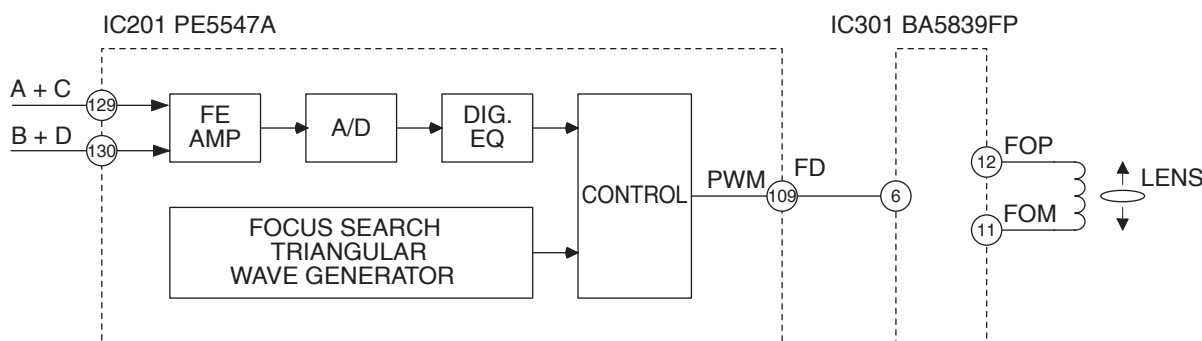


Fig.1.2.1 Block diagram of the focus servo system

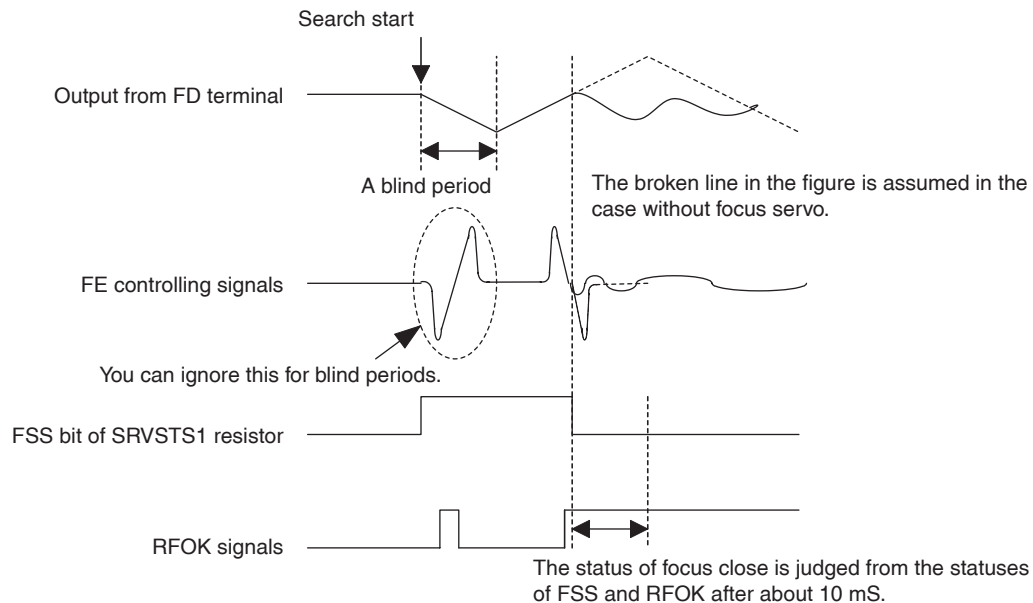


Fig.1.2.2 Timing chart for focus close operations

### 1.2.2 Tracking servo system

The main equalizer of the tracking servo consists of the digital equalizer block. The figure 1.2.3 shows the block diagram of the tracking servo system.

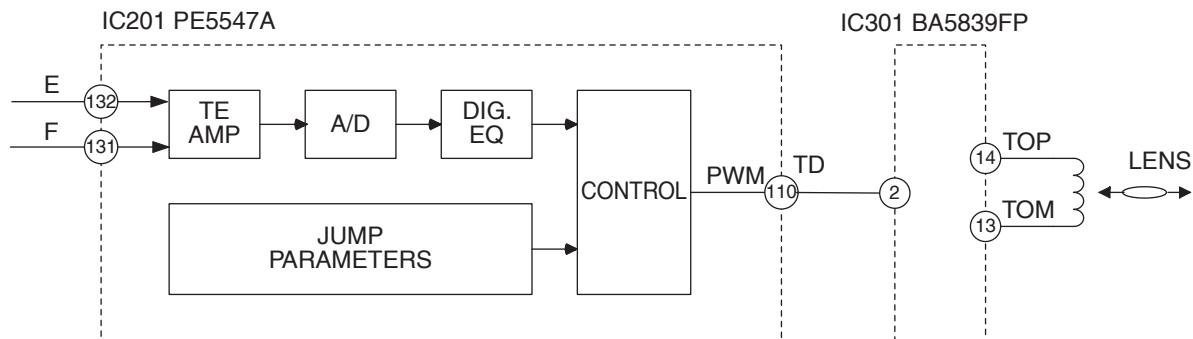


Fig.1.2.3 Block diagram of the tracking servo system



(a) The track jump operation is automatically performed by the auto-sequence function inside the LSI with a command from the CPU of the LSI. For the track jumps used in the search mode, a single track jump and four to 100 multi-track jump are available in this system. In the test mode, out of these track jumps, 1, 32, and  $32 \times 3$  track jumps, as well as carriage move can be performed and checked in mode selection. In a track jump, the CPU of the LSI sets about half the number of the total tracks to jump (about five tracks for a 10-track jump), and the set number of tracks are counted using the TEC signal. By outputting the brake pulse for a certain period of time (set by the CPU of the LSI) from the time the set number is counted, and stopping the lens, the tracking loop can be closed so that the normal play can be continued.

Also, in order to facilitate closing of the tracking loop in a track jump, the brake circuit is kept ON for 50 msec, after the brake pulse is stopped, for increasing the tracking servo gain. The FF/REW action in the normal operation mode is realized by performing single jumps consecutively. The speed is approximately 10 times faster than in the normal mode.

#### (b) Brake circuit

Since the servo loop is not closed very well in the setup mode and track jump mode, the brake circuit is used for stabilizing the servo-loop close operation. The brake circuit detects the direction in which the lens moves, and outputs only the drive signal for the direction opposite to the movement to slow down the lens, thereby stabilizing the tracking servo-loop close operation. Additionally, the off-track direction is determined from the TEC and MIRR signals, as well as their phase relation.

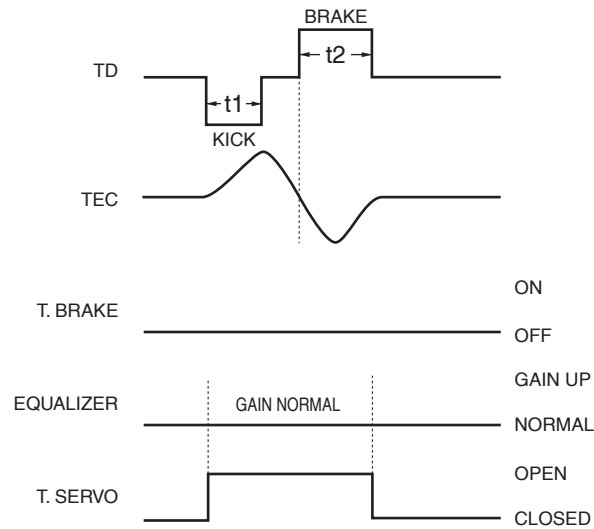


Fig.1.2.4 Single-track jump

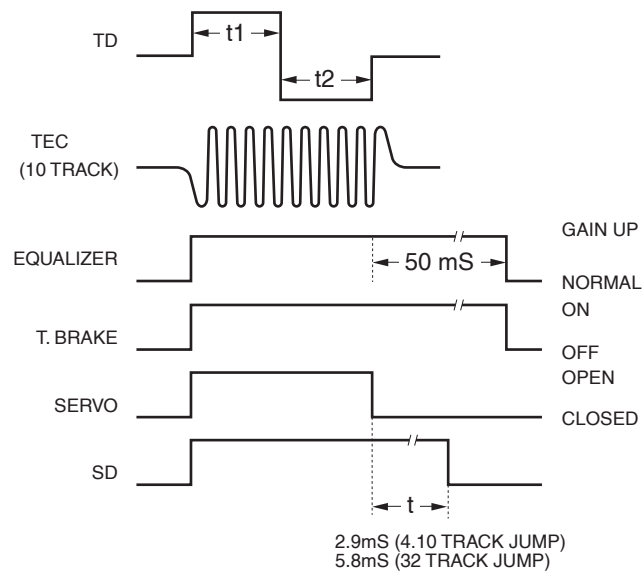
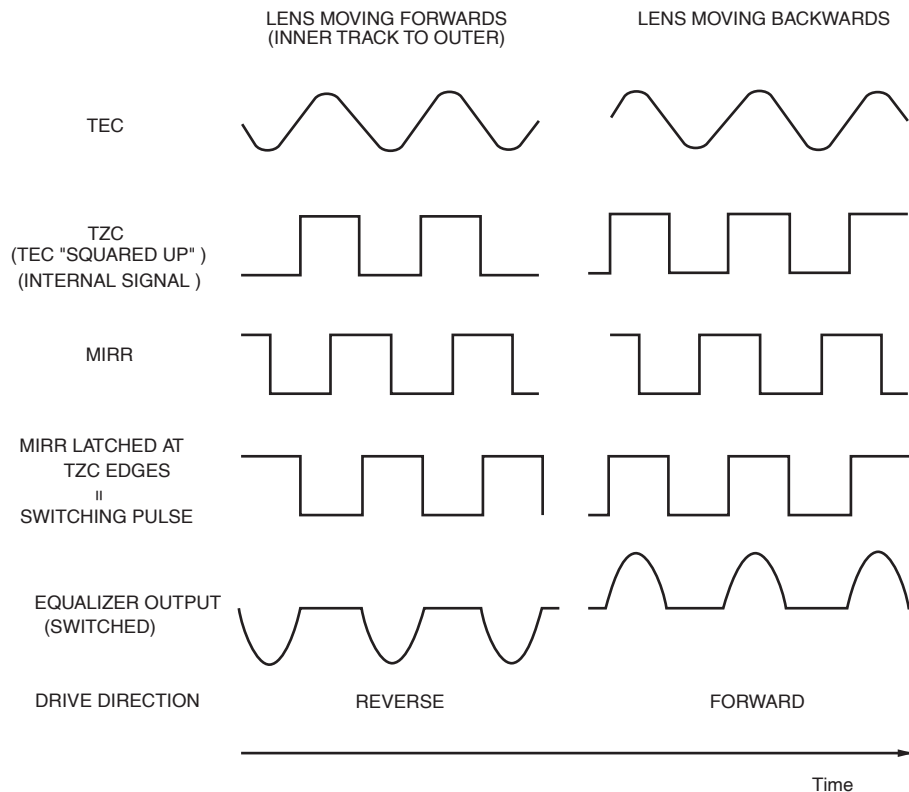


Fig.1.2.5 Multi-track jump



Note : Equalizer output assumed to have same phase as TEC.

Fig.1.2.6 Track brake

### 1.2.3 Carriage servo system

The carriage servo system inputs the output of the low frequency component from the tracking equalizer (information on the lens position) to the carriage equalizer, and, after the gain is increased to a certain level, outputs the drive signal from the CD of the LSI. This signal is applied to the carriage motor via the driver IC.

Specifically, since it is necessary to move the whole pickup to the FORWARD direction when the lens offset reaches a certain level during the play mode, the equalizer gain is set to output higher voltage than the carriage motor starting voltage at this time. In actual operations, a certain threshold level is preset in the servo LSI for the equalizer output, and only when it exceeds the threshold level, the drive voltage will be output. This can reduce the power consumption. Also, before the whole pickup starts moving, the equalizer output voltage may exceed the threshold level a few times, due to such causes as eccentricity of discs. In this case, the output waveform of the drive voltage from the LSI assumes a pulse-like form.

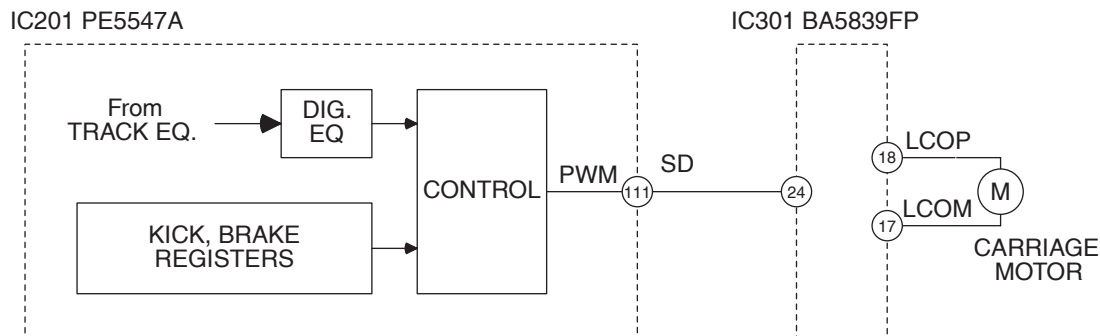


Fig.1.2.7 Block diagram for the carriage servo block

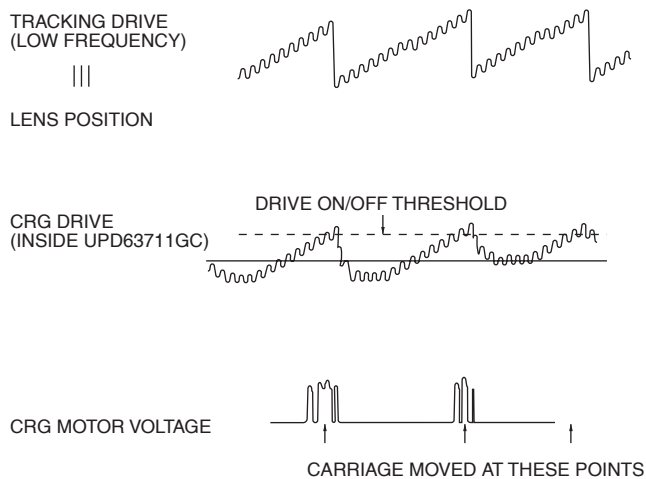


Fig.1.2.8 Waveforms of the carriage signal

## 1.2.4 Spindle servo system

In the spindle servo system, the following modes are available:

### 1) Kick

Used to accelerate the disc rotation in the setup mode.

### 2) Offset

a. Used in the setup mode after the kick mode, until the TBAL adjustment is completed.

b. Used during the play mode when the focus loop is unlocked, until it is locked again.

In both cases, the mode is used to keep the disc rotation approximately normal.

### 3) Applicable servo

CLV servo mode, used in the normal operation.

In the EFM demodulation block, by WFCK/16 sampling whether the frame sync signal and the internal frame counter output are synchronized, a signal is created to show if they are "in-sync" or "non-sync." The status is not recognized as asynchronous until the signal is "non-sync" for eight consecutive times; otherwise it is recognized as synchronous. In the applicable servo mode, the leading-in servo mode is automatically selected in the asynchronous status, and the normal servo mode in the synchronous status.

### 4) Brake

Used to stop the spindle motor.

In accordance with the CPU of the LSI command, the brake voltage is sent out from the servo LSI. At this time, the EFM waveform is monitored in the LSI, and when the longest EFM pattern exceeds a certain interval (or the rotation slows down enough), a flag is set inside the CD of the LSI, and the CPU of the LSI switches off the brake voltage. If a flag is not set within a certain period, the CPU of the LSI shifts the mode from the brake mode to the stop mode, and retains the mode for a certain period of time. If the mode switches to this stop mode in the eject operation, the disc will be ejected after the period of time mentioned above elapses.

### 5) Stop

Used when the power is turned on and during the eject operation. In the stop mode, the voltage in both ends of the spindle motor is 0 V.

### 6) Rough servo

Used in carriage feed (carriage move mode such as long search).

By obtaining the linear velocity from the EFM waveform, the "H" or "L" level is input to the spindle equalizer. In the test mode, this mode is also used for grating confirmation.

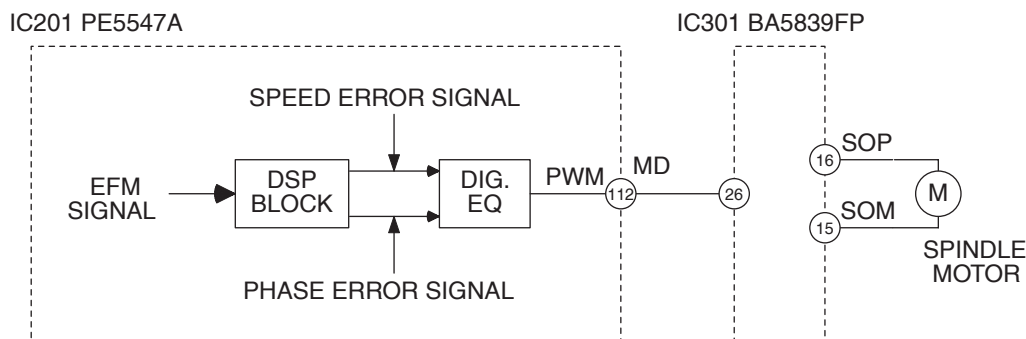


Fig.1.2.9 Block diagram of the spindle servo system

## 1.3 AUTOMATIC ADJUSTMENT FUNCTION

In this system, all the circuit adjustments are automated inside the CD of the LSI.

All adjustments are performed whenever a disc is inserted or the CD mode is selected by pressing the source key.

Details of each adjustment will be explained below.

### 1.3.1 TE, FE, and RF offset auto-adjustment

In this adjustment the TE, FE, and RF amplifier offsets of the preamplifier block in POWER ON are adjusted to the respective target values with the REFO as reference. (The target values for TE, FE, and RF offsets are 0 V, 0 V, and - 0.8 V, respectively.)

Adjusting procedure

1) The CPU of the LSI reads respective offsets through the CD of the LSI, when they are in LDOFF status.

2) The CPU of the LSI calculates the voltages for correction from the values read in 1), and substitutes the corrected values to prescribed places to adjust.

### 1.3.2 Tracking balance (T.BAL) auto-adjustment

This adjustment equalizes the output difference of the E-ch and F-ch from the pickup by changing the amplifier gain inside the CD of the LSI. In actual operation, adjustment is performed so that the TE waveform becomes symmetrical on each side of the REFO.

Adjusting procedure

1) After closing the focus loop,

2) Kick the lens in the radial direction to ensure the generation of the TE waveform.

3) The CPU of the LSI reads the offset amount of the TE signal calculated in the LSI at the time through the CD of the LSI.

4) The CPU of the LSI determines the offset amount is 0, positive, or negative.

- When the offset amount is 0, the adjustment is completed.

- When the offset amount is positive or negative, the amp gains for E-ch and F-ch should be changed, following a certain rule.

Then, steps 2) to 4) are repeated until the offset amount becomes 0 or the repetition reaches the limit number of times.

### 1.3.3 FE bias auto-adjustment

This adjustment is to maximize the RFO level by optimizing the focus point during the play mode, utilizing the phase difference between the 3T level waveform of the RF waveform and that of when focus error disturbance is input. This adjustment is performed at the same timing as the auto-gain control, which will be described later, since disturbance is input to the focus loop.

Adjusting procedure

1) The CPU of the LSI issues the command to introduce disturbance to the focus loop (inside the CD of the servo LSI).

2) The waver of the 3T component of the RF signal is detected in the CD of the LSI.

3) The relation between the 3T component above and the disturbance is processed inside the CD of the LSI to detect the volume and direction of the focus offset.

4) The CPU of the LSI issues a command and reads out the detected results from the CD of the LSI.

5) The CPU of the LSI calculates the necessary correction and substitutes the result to the bias adjustment term inside the CD of the LSI.

Additionally, in this adjusting, a series of steps are repeated for better adjustment accuracy, the same as in the auto-gain control.

### 1.3.4 Focus and tracking AGC

This adjustment is to automatically adjust the focus and tracking servo loop gains.

Adjusting procedure

- 1) Introduce disturbance to the servo loop.
- 2) The error signals (FE and TE) when disturbance is introduced are extracted through the band pass filter, to obtain the G1 and G2 signals.
- 3) The CPU of the LSI reads the G1 and G2 signals through the CD of the LSI.
- 4) The CPU of the LSI calculates the necessary correction and performs the loop gain adjustment inside the CD of the LSI.

For increased adjustment accuracy, the same adjustment process is repeated a few times.

### 1.3.5 RF level auto-adjustment (RFAGC)

This adjustment is to adjust the dispersion of the RF level (RFO), which may be caused by mechanism or disc-related factors, to a steady value for reliable signal transmission. The adjustment is performed by changing the amp gain between RFO and RFAGC.

Adjusting procedure

- 1) The CPU of the LSI issues a command and reads out the output from the RF level detection circuit inside the CD of the LSI.
- 2) From the read values, the CPU of the LSI calculates the amp gain to change the RFO level to the target.
- 3) The CPU of the LSI sends a command to the CD of the LSI to adjust the amp gain to the level calculated in 2).

This adjustment is performed

- 1) when only the focus close operation is completed during the setup mode, and
- 2) immediately before the setup is completed (or when the play mode is about to start).

### 1.3.6 Adjustment of gains in preamplifier stage

In this adjustment, when reflected beams from the disc surface are extremely weak, such as when the lens is dirty, or a CD-RW is played, gains in the whole RFAMP block (FE, TE, and RF amplifiers) are increased by + 6 dB or + 12 dB, depending on the situation.

Adjusting procedure

When the system determines that the reflected beams from the disc surface are extremely weak during the setup mode, the whole RFAMP gains will be increased by + 6 dB or + 12 dB.

### 1.3.7 Initial values in adjustment

All automatic adjustments immediately after inserting a disc are performed based on the initial values. Automatic adjustments by source change or ACC ON are basically performed using the previous adjustment values as the initial values.

### 1.3.8 Coefficient display of adjustment results

For some of the adjustments (FE and RF offset, FZD cancel, F and T gains, and RFAGC), the adjustment results can be displayed and confirmed in the test mode.

A The coefficient display in each auto adjustment is as follows:

1) FE and RF offset

Reference value = 32 (coefficient of 32 indicates that no adjustment is required)

The value is displayed in the unit of approximately 32 mV.

Ex. When the FE offset coefficient is 35,

$35 - 32 = 3 \times 32 \text{ mV} = 96 \text{ mV}$

The correction is about +96 mV, which means the FE offset before adjustment is - 96 mV.

2) F and T gain adjustment

Reference value for focus and tracking = 20

B The displayed coefficient / the reference value indicates the adjusted gain.

Ex. When the AGC coefficient is 40,

adjustment of  $40 / 20 = 2$  times (+ 6 dB) has been performed.

(It means that the original loop gain was half the target, and the whole gain was doubled to obtain the target value.)

3) RF level adjustment (RFAGC)

Reference value = 8

The coefficient of 9 to 15 indicates to increase the RF level

(for more gains).

The coefficient of 7 to 10 indicates to decrease the RF level

(for less gains).

C When the coefficient changes by 1, the gain changes by 0.7 to 1 dB.

When the coefficient is 15, the gain is the maximum at TYP + 7.9 dB.

When the coefficient is 0, the gain is the minimum at TYP - 4.6 dB.

D

E

F

## 1.4 POWER SUPPLY AND LOADING BLOCK

For the power supply for this system, the VD ( $7.5 \pm 0.5$  V) and the VDD ( $3.3 \pm 0.165$  V), which are supplied from the motherboard, are used. The two power supplies, the VD mentioned above (for the drive system), and the VDD (for the LSI: 3.3 V), are used in this system.

The CPU of the LSI controls ON/OFF with "CONT", except for Load/Eject of the CD driver. For ON/OFF of the Loading drive, no particular control terminals are available, but the input signal "LOEJ" assumes an equivalent role. Also, the LCO output switches LOADING MODE and CARRIAGE MODE with "CLCONT".

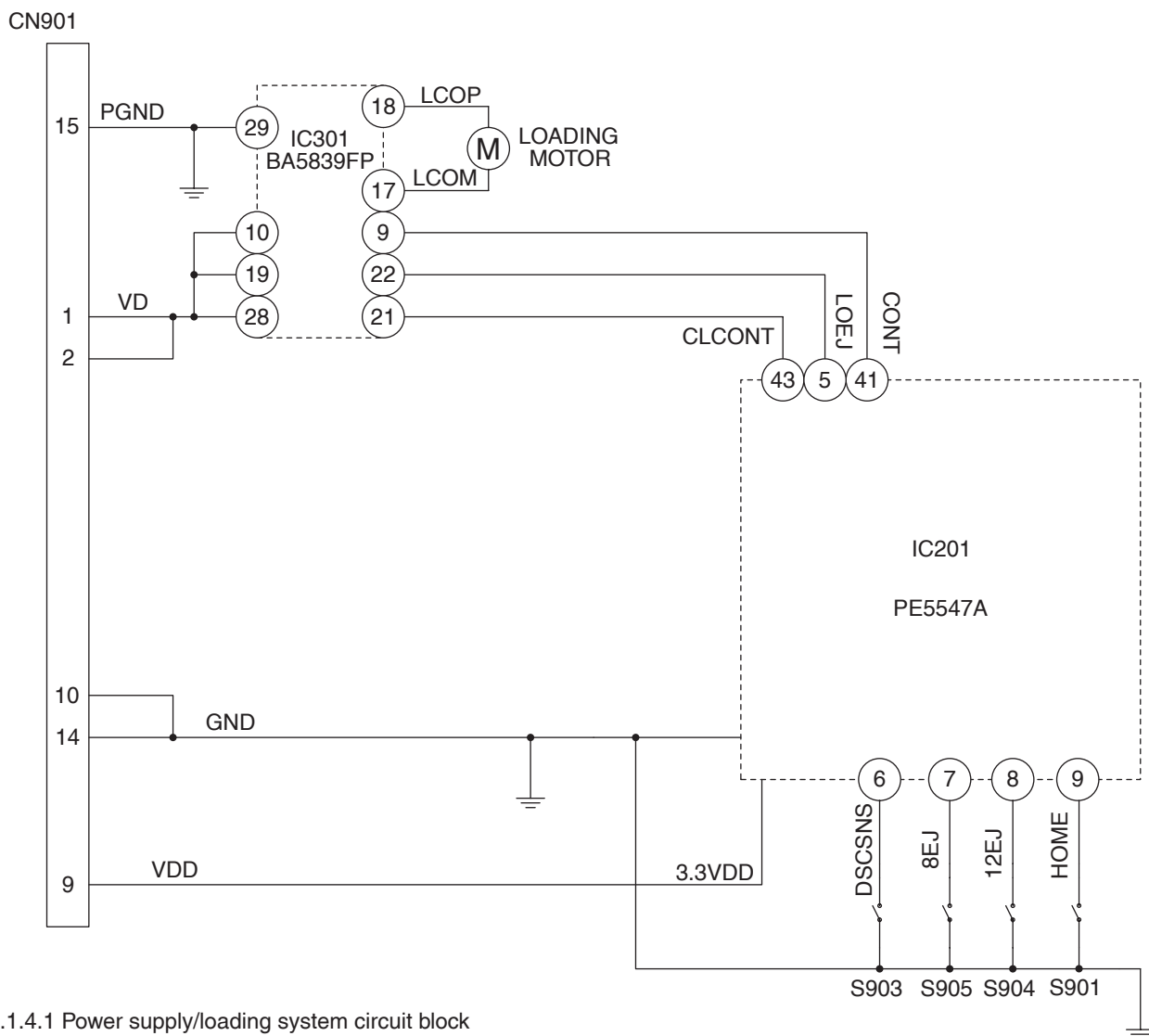


Fig.1.4.1 Power supply/loading system circuit block

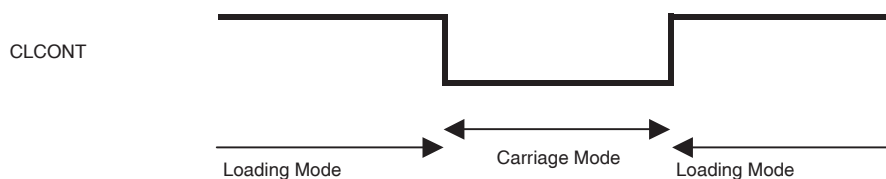


Fig.1.4.2 Loading/carriage mode shift

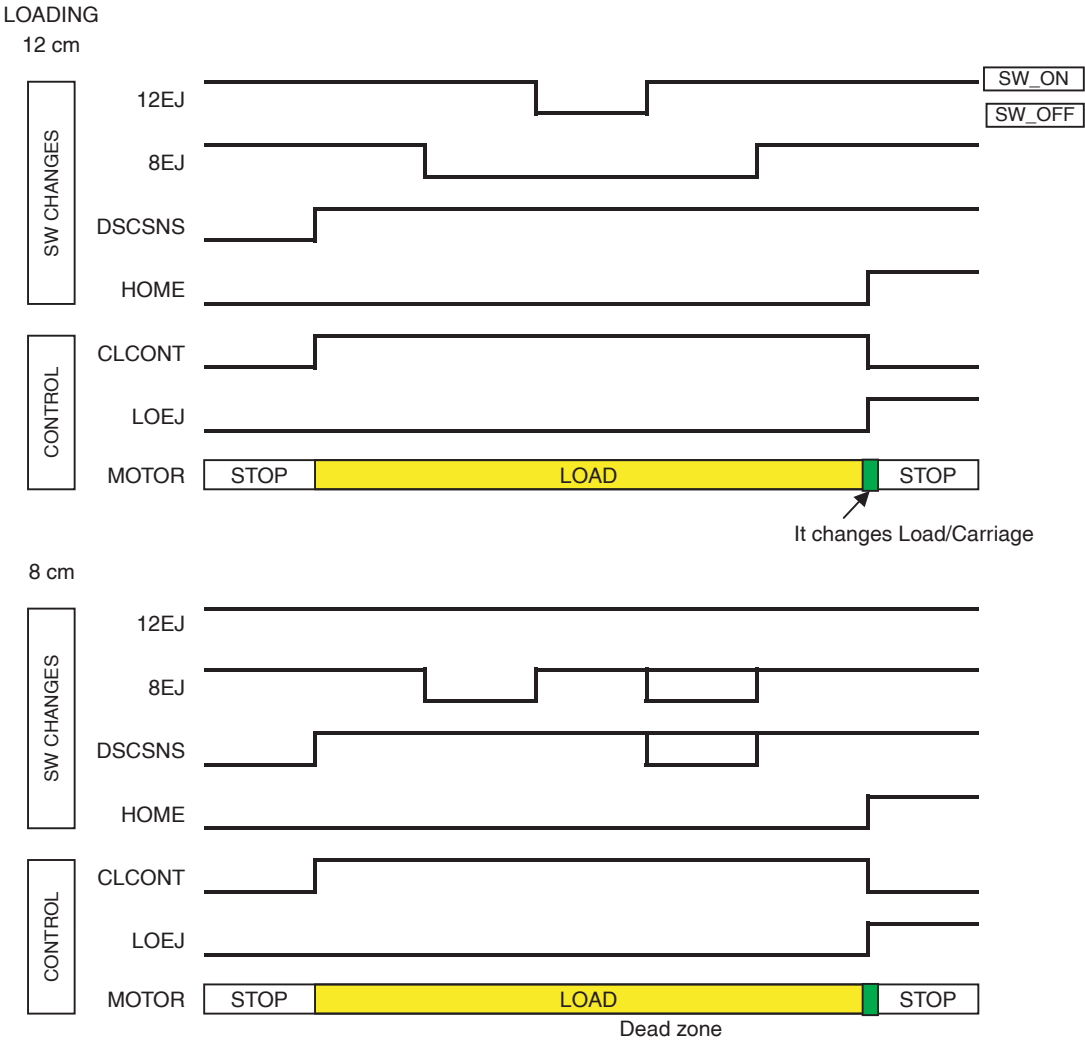


The load/eject operation is controlled with the status changes of the HOME switch (also used for clamp detection) on the mechanism unit and the three switches on the control unit. The ON/OFF statuses of these switches are respectively detected at the input port of the microcomputer.

Using the detection results in the microcomputer, each status (A to E) is determined. The disc size detection (8 or 12 cm) is also performed through this status change. Each status is shown in Fig.1.4.3 and the status change in Fig.1.4.4.

Status	A	B	C	D	E
DSCSNS	OFF	ON	ON	ON	ON
8SW	ON	ON	OFF	OFF	ON
12SW	ON	ON	ON	OFF	ON
HOME	OFF	OFF	OFF	OFF	ON
Mechanism state	With no disc				Clamp state

Fig.1.4.3 DSCSNS status



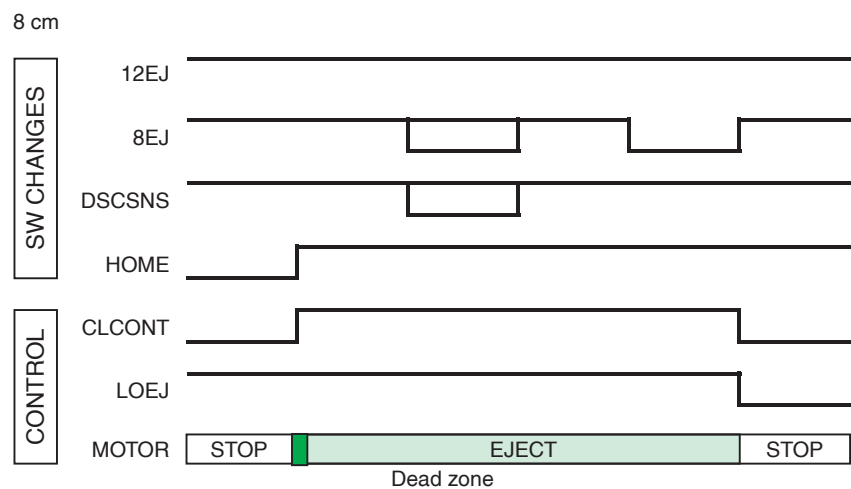
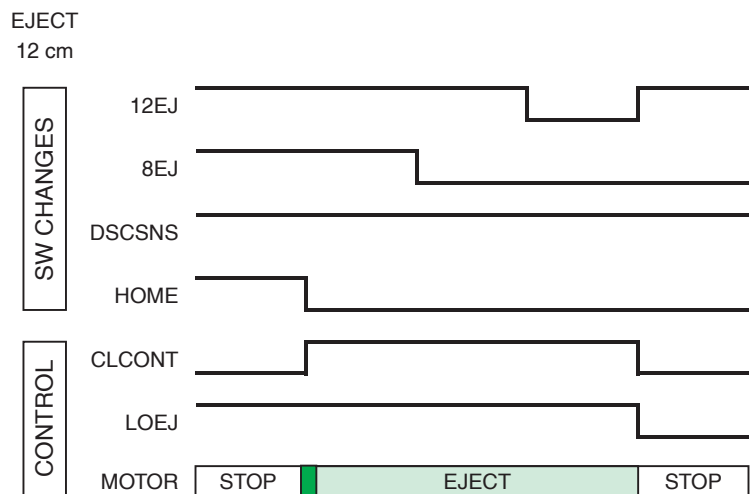


Fig.1.4.4 Status change in LOAD and EJECT modes

## 2. MECHANISM DESCRIPTIONS

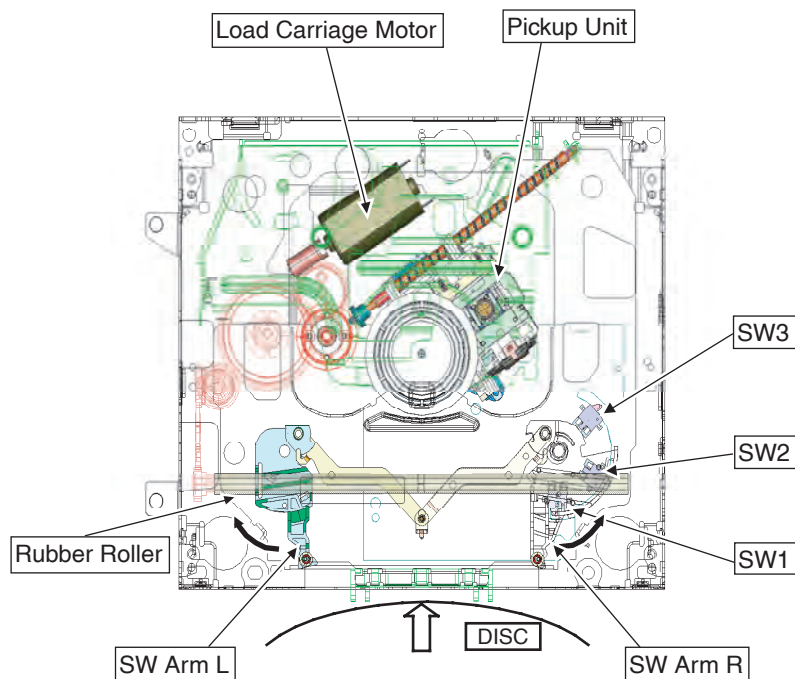
### ● Loading actions

1. When a disc is inserted, SW Arm L and R rotate and SW1 is switched from ON to OFF.

When SW1 is switched from ON to OFF, the Load Carriage Motor is started and the rubber roller rotates.

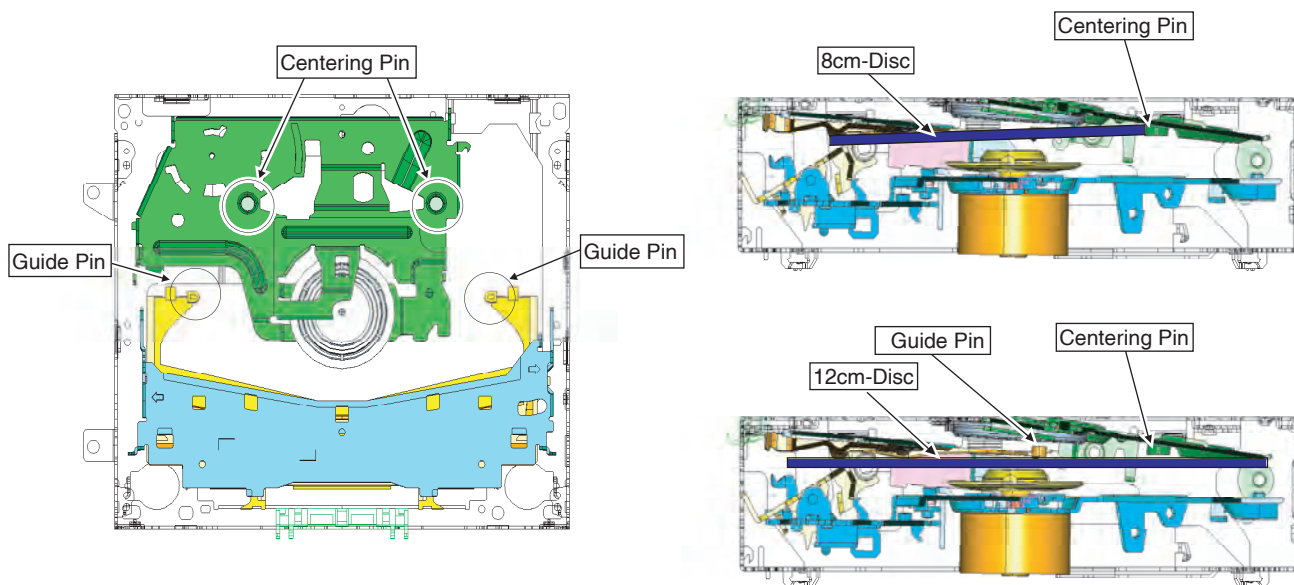
2. If the disc is a 12cm-disc, SW3 is turned ON with SW Arm, and the microcomputer determines that the disc is a 12cm-disc.
3. In case of an 8cm-disc, SW3 is not turned ON, a clamp action is triggered, and the microcomputer determines that the disc is an 8cm-disc.

(The left and right of SW Arm are coupled, and when only one side is pushed, the coupled joint will lock, and the arms will not open more than a certain width (SW3 will not be turned ON).)



### ● Disc centering mechanism

1. 8cm-disc is centered by the Guide Pins and the Centering Pins.
2. 12cm-disc passes under the Guide Pins and the Centering Pins, and is centered in the back position of the mechanism.



### ● Clamp actions mechanism

1. With an 8 or 12cm-disc centered on the spindle, the Detection Arm is moved.

2. The movement of the Detection Arm engages the Loading Rack with the 2-Stage Gear.

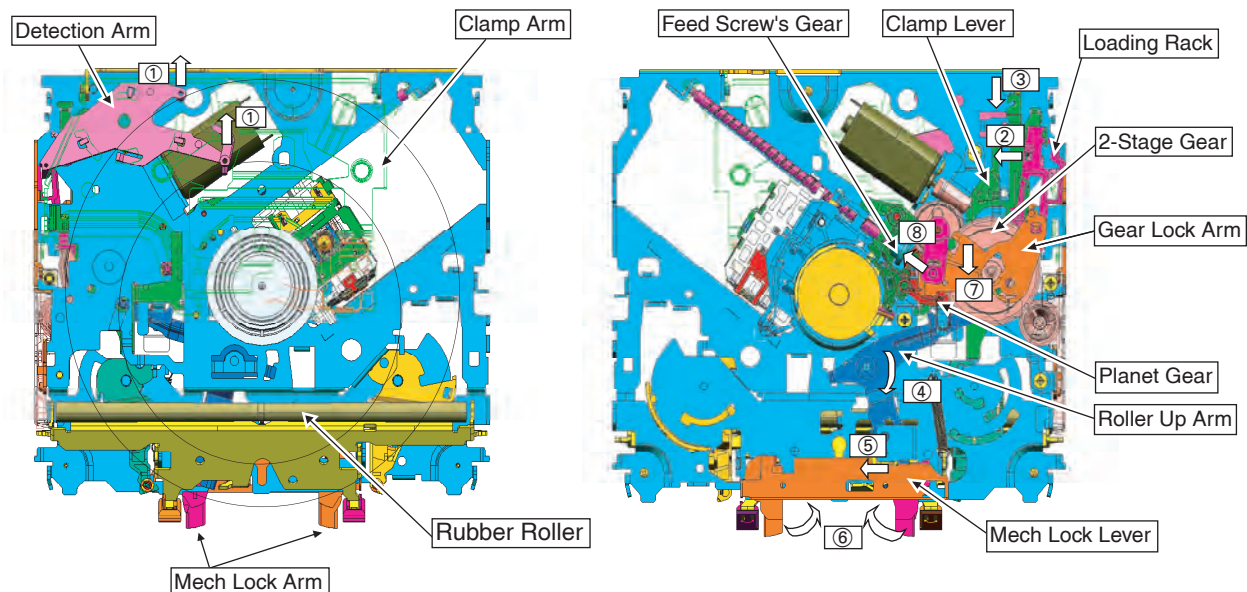
3. The Clamp Lever slides and lowers the Clamp Arm (the disc is clamped).

At the same time, the Roller Up Arm is rotated, and the Rubber Roller is separated from the disc.

Also the arm slides the Mechanical Lock Lever, turns the Mechanical Lock Arm, and releases the mechanical lock, completing the clamp operation.

4. When the clamp action is completed, the Clamp Lever rotates the Gear Lock Arm.

When the arm is rotated, the Planet Gear is separated from the 2-Stage Gear and engaged with the gear of the pickup feed screw, and the carriage operation will start



### ● Eject actions

1. When the Load Carriage Motor is rotated backward, and the pickup is fed to the inner periphery passing the home SW ON point, the eject action will start in the reverse order of the procedure mentioned earlier.

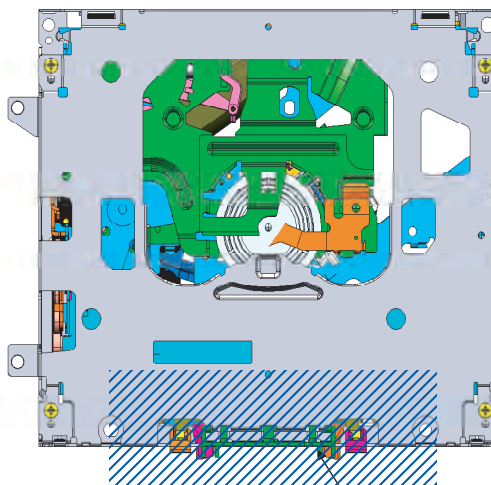
2. For a 12cm-disc, Eject is completed when SW3 is switched OFF, ON, and OFF again.

3. For an 8cm-disc, Eject is completed when SW2 is switched OFF, ON, and OFF again.

### 3. DISASSEMBLY

#### ● How to hold the Mechanism Unit

1. Hold the Upper and Lower Frames.
2. Do not hold the front portion of the Upper Frame, because it is not very solid.

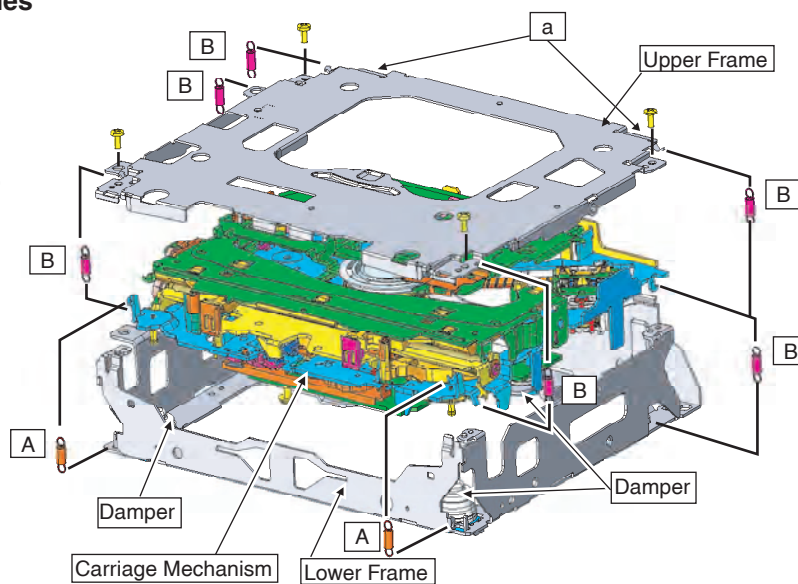


Do not squeeze this area.

#### ● Removing the Upper and Lower Frames

1. With a disc inserted and clamped in the mechanism, remove the two Springs (A), the six Springs (B), and the four Screws.
2. Turn the Upper Frame using the part "a" as a pivot, and remove the Upper Frame.
3. While lifting the Carriage Mechanism, remove it from the three Dampers.

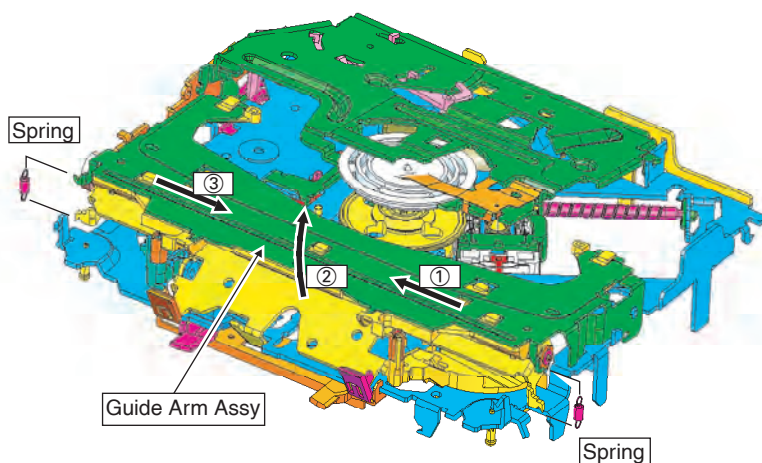
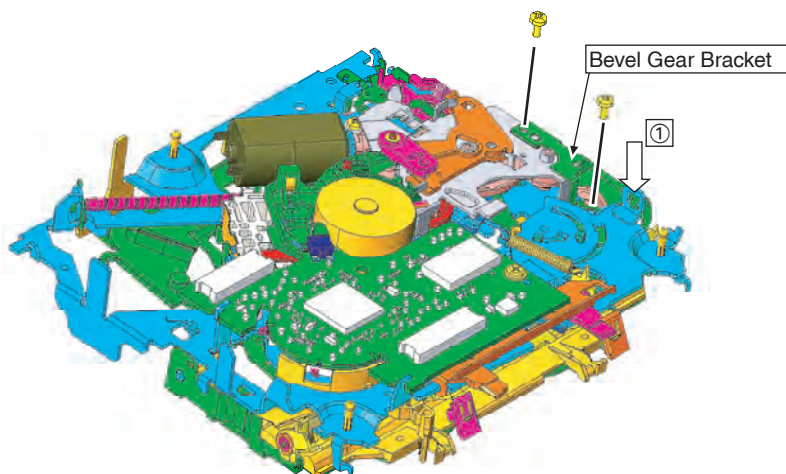
Caution: When assembling, be sure to apply some alcohol to the Dampers and assemble the mechanism in a clamped state.



### ● Removing the Guide Arm Assy

1. Remove the Upper and Lower Frames and set the mechanism to the eject mode.
2. Remove the two Screws and Bevel Gear Bracket. (Note that the gears will come off.)
3. Remove the two Springs from the left and right sides.
4. Slide the Guide Arm Assy to the left, and turn it upward.
5. When it is turned about 45 degrees, slide it to the right and remove.

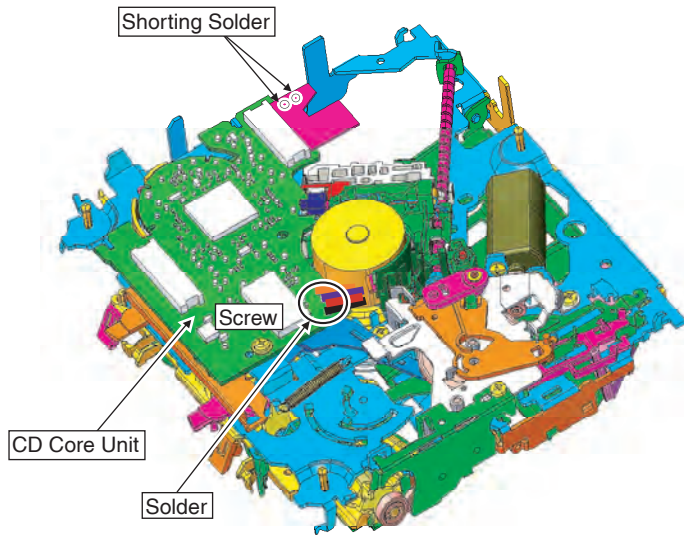
Caution: When assembling, assemble with the Bevel Gear Bracket moved to the direction of the arrow (①).





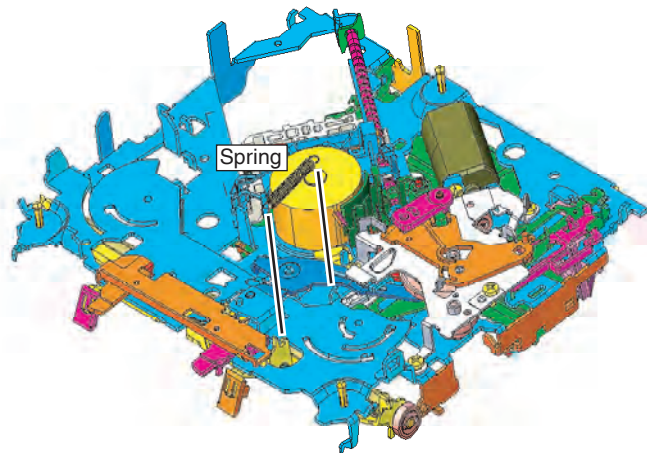
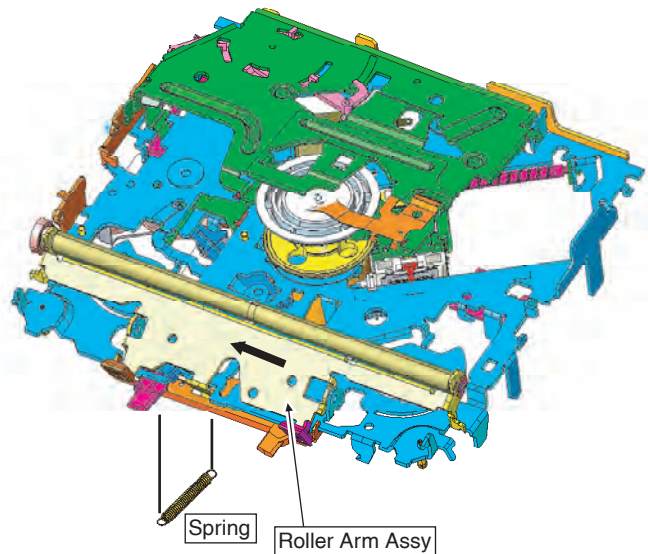
### ● How to remove the CD Core Unit

1. Apply Shorting Solder to the flexible cable of the Pickup, and disconnect it from the connector.
  2. Unsolder the four leads, and loosen the Screw.
  3. Remove the CD Core Unit.
- Caution: When assembling the CD Core Unit, assemble it with the SW in a clamped state so as not to damage it.



### ● How to remove the Roller Arm Assy

1. Remove the Guide Arm Assy.
2. Remove the CD Core Unit. (If the Spring can be removed, the unit need not be removed, depending on the type of CD Core Unit.)
3. Remove the Spring.
4. Slide the Roller Arm Assy to the left.

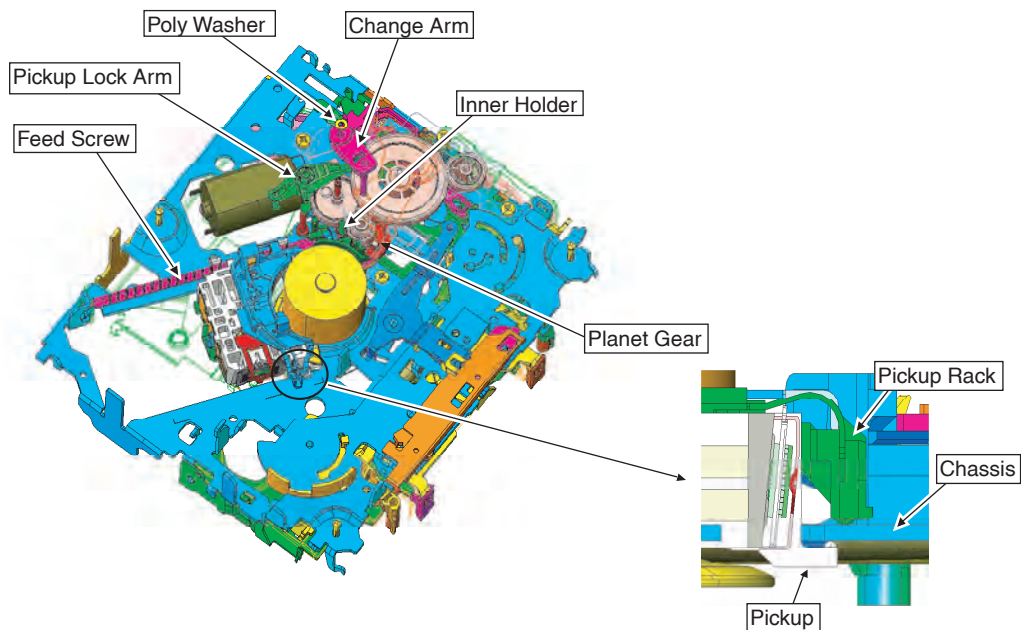


## ● How to remove the Pickup Unit

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. While releasing from the hook of the Inner Holder, lift the end of the Feed Screw.

Caution: When assembling, move the Planet Gear to the load/eject position before setting the Feed Screw in the Inner Holder.

Assemble the sub unit side of the Pickup, taking the plate (Chassis) in-between. When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



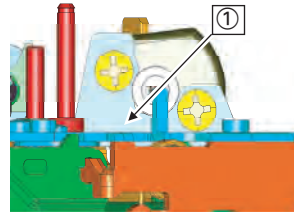
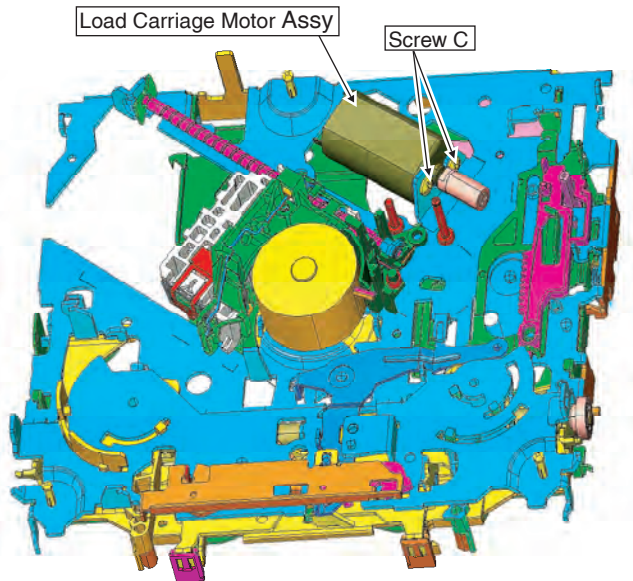
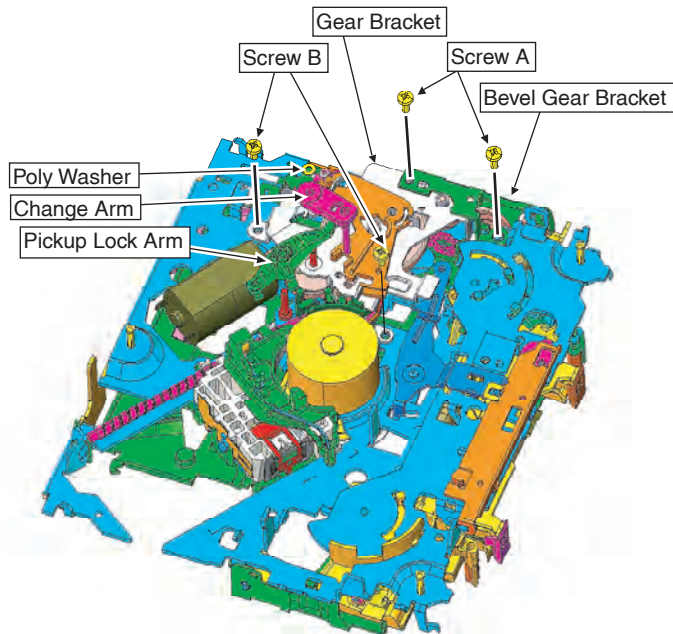


## ● How to remove the Load Carriage Motor Assy

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Release the leads (orange and purple) of Load Carriage Motor Assy from the CD Core Unit and remove the holder.
3. Remove the Poly Washer, Change Arm, and Pickup Lock Arm.
4. Remove the two Screws (A) and the Bevel Gear Bracket (Note that the gears will come off).
5. Remove the two Screws (B) and the Gear Bracket (remove the CD Core Unit, if necessary), and remove all the gears.
6. Remove the two Screws (C) and the Load Carriage Motor Assy.

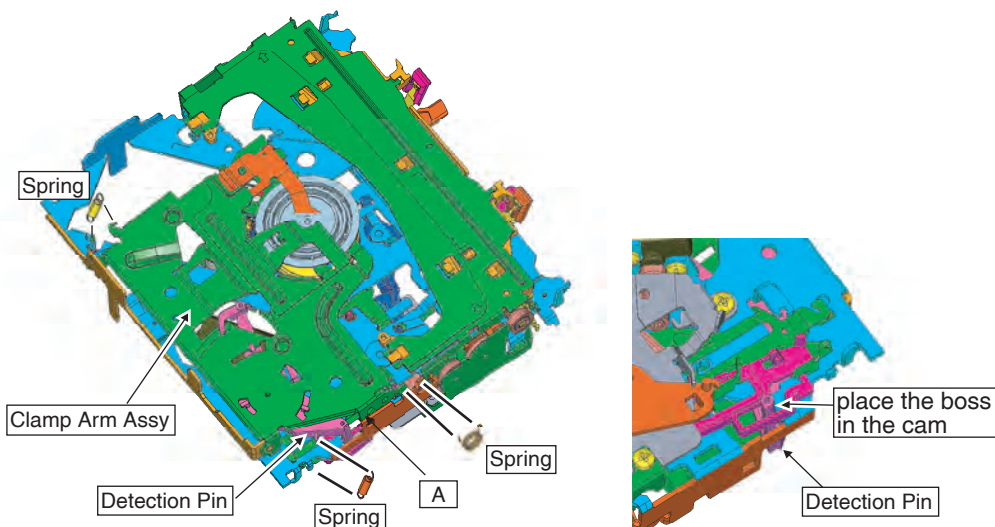
Caution: When assembling the Load Carriage Motor Assy, move it to the direction shown in the illustration (①).

When treating the leads of the Load Carriage Motor Assy, do not make them loose over the Feed Screw.



### ● How to remove the Clamp Arm Assy

1. Make the system in the carriage mechanism mode, and set the mechanism to the eject mode.
  2. Remove the three Springs.
  3. While pressing the position A, turn the Clamp Arm Assy upward, slide it to the left, and remove.
- Caution: When assembling, place the boss of the Detection Pin in the cam unit of the Loading Rack.



### ● How to remove the Spindle Motor Assy

1. Make the system in the carriage mechanism mode, and have it clamped.
2. Remove the CD Core Unit and remove the leads from the Inner Holder.
3. Set the mechanism to the eject mode and remove the Clamp Arm Assy.
4. Set the mechanism to the clamped and move the Pickup to circumference.
5. Remove the two Screws, and remove the Spindle Motor Assy.

